PARENTAL ATTRIBUTIONS ABOUT THE AETIOLOGY OF, AND ACCEPTABILITY OF TREATMENT, FOR CHILDREN WITH ATTENTION DEFICIT-HYPERACTIVITY DISORDER

A thesis

submitted in partial fulfilment

of the requirements for the Degree

of

Masters of Science in Psychology

in the

University of Canterbury

by

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University of Canterbury

2001

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ACKNOWLEDGEMENTS

I would like to extend my sincere thanks and appreciation to everyone who participated in this research, and assisted in bringing it to fruition.

Foremost, I would like to thank the Triple P foundation, for the scholarship that helped me to complete this research, in particular Steven Hayns for his help, encouragement and general enthusiasm.
I would also like to thank my supervisors: Neville Blampied for his guidance and assistance and Karyn France for her support in helping me with the initial topic, and encouraging me to take this on.

Thanks also to Kathleen Liberty in the Education Department for her advice on diagnostic scales.

A big thanks to all the volunteers, without whom this research could never have been conducted. Also, thanks to all the people who offered to act as intermediaries for me: Michelle and Fiona at the Pakuranga Health Camp; Julie Broerse from the Christchurch ADHD Support Group; Marianne Judge at the Chomondley Home School in Governor's Bay; and in particular, Diane Wellacot at ADHD Association Inc., in Auckland, and principal Alison Grimshaw at Opawa School for answering my call for help willingly at such short notice.

Thanks must also go to Lynden Miles for his support, statistical expertise and role in generally restoring my sanity.

Finally, thanks to my family and friends who were always there when I needed their love and support or general stress release. I am so grateful for their patience and for them helping me to keep perspective of the big picture.

Thank you all.

ABSTRACT

Attributions for problem child behaviours and acceptability of behavioural family intervention were compared in 35 parents of children with attention deficit-hyperactivity disorder (ADHD) and 15 parents of children without behavioural problems. Parents responded to questionnaires and rating scales provided in booklet form on the frequency and severity of his or her child's behaviour, and what he or she believed to be the general causes of the problem behaviour. The results of the present study suggest that severity and frequency of an ADHD child's behaviour may be the major factors influencing parental attributions about the cause of the disorder. Compared with parents of children without behavioural disorders, parents of children with ADHD generally saw biological causes as being more influential on their child's problem behaviour than did the parents of children without ADHD. This difference in beliefs about causation did not, however, generate significant differences between groups in the acceptability of behavioural family intervention.

This study was reviewed and approved by the University of Canterbury Human Ethics Committee (Appendix A)

INTRODUCTION

Overview of ADHD

For over 20 years, Attention Deficit Hyperactivity Disorder (ADHD) was seen as comprising three primary symptoms, namely, 1) poor sustained attention, 2) impulsiveness, and 3) hyperactivity (American-Psychiatric-Association, 1980, 1987; Barkley, 1997). These behavioural difficulties become apparent early in childhood, usually before the age of 7, and are viewed as remaining relatively chronic throughout development (Anastopoulos, DuPaul, & Barkley, 1991; Barkley, 1997).

Recently, these three major symptoms have been reduced to two (impulsivity and hyperactivity being combined to a single impairment), and the fourth and current edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV;* American-Psychiatric-Association, 1994) now further categorises ADHD into 3 subtypes: 1) predominantly inattentive, 2) predominantly hyperactive-impulsive, and 3) combined types. The complete diagnostic criteria for this disorder can be found in Appendix A. This present study aims to deal with children diagnosed as ADHD, combined type.

Prevalence

ADHD affects between approximately 3-7% of the child population (Anastopoulos, Barkley, & Shelton, 1996), and in New Zealand studies have suggested a similar percentage (2-6%) of children to be affected (Anderson, Williams, McGee, & Silva, 1987; Fergusson, Horwood, & Lynskey, 1993). The proportion of males versus females with the disorder varies considerably across studies, but males are three times more likely to have ADHD than girls in the community and an average of 6:1 is most often cited for clinic-referred samples of children (Barkley, 1998). The male to female ratios range between 4:1 and 9:1, depending on the setting (American-Psychiatric-Association, 1994).

It seems the considerably higher rate of males is due to the fact that males are more likely to display aggressive and antisocial behaviour that is likely to get them referred to a professional, whereas girls are more likely to internalise symptoms (anxiety, depression) and withdraw socially (Barkley, 1998). Although research on females with ADHD is sparse due to the difference in gender ratios in diagnosis, preliminary comparisons suggest ADHD females may not be as impaired as males in certain domains, such as behavioural variables, including hyperactivity, peer aggression, Conduct Disorder, and externalising behaviours (Gaub & Carlson, 1997). However, recent research suggests contrary findings, finding that in many cases, ADHD females were more impaired than males, and perhaps more likely to report psychological difficulties (Rucklidge & Tannock, in press). Barkley (1998) suggests the most reliable difference between boys and girls with ADHD is the lowered risk of Oppositional Defiant Disorder and Conduct Disorder in girls compared with boys.

Related Behavioural Problems

Children with ADHD are also at risk of other coexisting psychiatric disorders, such as Conduct Disorder or Oppositional Defiant Disorder, all requiring specific individual treatment. Up to 44% have at least one other psychiatric disorder, 32% have two others, and 11% have at least three others (Barkley, 1998). Children with ADHD have also been found to have more symptoms of anxiety, depression, and lower self-esteem than children without behavioural difficulties do (Barkley, 1998). It is widely accepted by researchers that children with ADHD display greater degrees of difficulty with oppositional and defiant behaviour, aggressiveness and conduct problems, and even antisocial behaviour, relative to normal children, all of these being collective symptoms of ADHD, Conduct Disorder and Oppositional Defiant Disorder (Barkley, 1998). Thus, it is often difficult for clinicians to separate and define the individual disorders, and prescribe appropriate treatments for each.

However, there is a general consensus amongst researchers that ADHD symptoms have biological foundations, and children with ADHD are more likely to have developmental delays and cognitive deficits than Conduct Disorder children (Barkley, 1998). Children with Conduct Disorder and Oppositional Defiant Disorder, however, are more likely to come from backgrounds with greater social adversity, and have a higher prevalence of psychiatric disorders, substance dependence and abuse among parents and relatives, than children with ADHD without significant conduct problems (Jensen, Martin, & Cantwell, 1997; Kazdin, 1987).

Developmental Outcome

A number of developmental follow-up studies have indicated that between 30% and 80% of children with ADHD continue to suffer symptoms to a significant degree, or continue to meet the current diagnostic criteria for ADHD well into their adolescence and young adulthood (Barkley, 1998). ADHD is regarded by most experts as a chronic disorder, requiring ongoing treatment (The-MTA-Cooperative-Group, 1999a). It has been suggested, however, that although these symptoms remain present, they are not reported as the primary concerns for parents. Poor schoolwork, social difficulties with peers, problems related with authority (particularly at school) and low self-esteem are the major concerns for parents at this developmental stage. All of these symptoms are extremely likely to disadvantage the child in later life, as the child gradually falls behind their peers in these academic skills and social competencies (Weiss & Hechtman, 1993).

A study by Barkley et al. (1990) found similar results to others researching the developmental outcome of children with ADHD (reviewed in Barkley, 1998). This study found hyperactive children were at a "substantially higher risk for negative outcomes in the domains of psychiatric, social, legal, academic, and family functioning than a control group of

normal children followed concurrently" (Barkley, 1990, pg. 198). Another interesting study found that the persistence of the full disorder into adulthood depended on the source of information, and the diagnostic criteria used (Fisher, 1997), with the rate of persistence varying a great deal. Gittelman, Mannuzza, Shenker, and Bonagura, 1985; cited in Barkley, 1998) found that approximately a third of individuals expressed persistence of the disorder into young adulthood when self-report was used. In contrast, Fisher (1997) found only 3% of self-reporting subjects qualified for ADHD, yet their parents rated the presence of the disorder at 42% using DSM-IV criteria. However, if using those same parent reports with an empirical criterion, the rate rises again to 68% exceeding the diagnostic cut-off, therefore further suggesting that the young adults had retained the disorder. This supports findings that participants tend to underreport their own symptoms, whereas comparative parent reports of ADHD persistence are several times higher (Barkley, 1998).

ADHD can have a huge impact on the psychosocial functioning of the affected child and his or her family. The child may suffer decreased academic productivity, academic underachievement, peer-relationship problems, and diminished self-esteem (Anastopoulos et al., 1996). In addition, children suffering ADHD are at greater risk of experiencing family conflict, in particular with their parents, who are more likely themselves to be predisposed to higher levels of parenting stress, psychopathology, and marital discord (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992; Barkley, 1998). It is because the aetiology of ADHD is so complex, and the symptoms so far-reaching in their effects on the child's family, school and social environments, that therapy cannot be limited to one single modality of treatment.

Aetiology of ADHD

For one of the most prevalent childhood psychiatric disorders, the aetiology of ADHD is complex and many facets of it are poorly understood (Barkley, 1998). The history of

ADHD publications has spanned almost a century, as clinical scientists have tried to unpack the causal nature of the disorder. Etiological theories have incorporated a number of factors. Initially, environmental factors, such as child rearing (e.g. Bettleheim, 1973; Willis & Lovaas, 1977), poor diet and food additives (e.g. Feingold, 1975) were emphasised. Feingold's (1975) ideas became extremely popular, particularly in the United States, as he claimed that over half the children diagnosed with ADHD had developed their behavioural difficulties through their diet alone. It was suggested that effective treatment could be achieved if the children avoided foods containing additives. Extensive studies have failed to prove the poor diet theory (e.g. Conners, 1980, cited in Barkley, 1998). Later research also has shown that negative parent-child interactions do not have so much a causal relationship. Rather they contribute to the persistence of symptoms (Barkley, 1998).

Genetic factors have also received much research attention. Evidence suggests that ADHD is highly heritable, but not as a result of abnormal chromosomal structures, or extra chromosomal material. Twin studies, (e.g. Gilger, Pennington, & deFries, 1992), have shown that if one twin was diagnosed with ADHD, the concordance for the disorder was 81% in monozygotic twins, and 29% in dizygotic twins. Although the exact causality for ADHD symptoms is still unclear, studies have been published using molecular genetic techniques to analyse DNA in children with ADHD and their family members, focusing on dopamine genes (Blum, Cull, Braverman, & Comings, 1996; Cook, Stein, & Leventhal, 1997; Lahoste, Swanson, Wigal, Glabe, Wigal, King, & Kennedy, 1996; cited in Barkley, 1998). Other research has used magnetic resonance imaging (MRI) to evaluate brain structures of children with ADHD, with a number of studies reporting the prefrontal-striatal network as being smaller in children with ADHD, with the right prefrontal region being smaller than the left (Castellanos et al., 1994, 1996; Filipek et al., 1997; cited in Barkley, 1998). These studies

indicate that ADHD may be a result of impairments in the development of the brain, a view that has been further supported by the current focus on neurobiological factors.

Barkley's (1998) review shows that repeatedly, throughout the 20th C, similarities have been noted between the symptoms of ADHD and those produced by lesions or injuries to the frontal lobes more generally and the prefrontal cortex specifically (e.g. Benton, 1991; Mattes, 1980). Both children and adults who have suffered injuries to the prefrontal region have difficulty in maintaining sustained attention, controlling inhibition, regulating emotion and motivation and deficits in the ability to organise behaviour across time (Fuster, 1989; Grattan & Eslinger, 1991; Stuss & Benson, 1986; cited in Barkley, 1998).

A substantial body of evidence has shown these genetic and neurological factors as causal factors for the symptoms of ADHD. Barkley (1998) concludes that social or environmental factors alone could not be causes of ADHD, but there are strong indications that such factors may "exacerbate the condition, contribute to its persistence, and, more likely, contribute to the forms of comorbid disorders associated with ADHD" (pp. 176-177). It is apparent from a scientific standpoint that understanding of aetiology on its own is not a necessary pre-requisite for the development of effective treatments. Nor does identification of the genetic or neurological fault that is responsible for a disorder necessarily imply that pharmacological (or other physical or biological) treatments are necessarily the best form of therapy. Given these complex relationships between causal variables and the development of effective treatments, it is relatively easy for misattributions about cause and treatment to develop. If this is the case, attributions about causes of ADHD may play a vital role in selection and use of appropriate treatments for behavioural disorders, as parents (and others) may hold false beliefs regarding both aetiology and the effectiveness of treatments, and about relations among these variables.

Dominant Treatment Approaches

Treatments for ADHD are numerous, including psychopharmacological therapy, cognitive-behavioural training, and parent training in behaviour management skills. No single treatment has yet proven to "cure" ADHD, and treatments generally provide only symptomatic relief. Hence, as ADHD cannot be cured completely, most experts now regard ADHD as a chronic developmental disability, requiring long-term symptomatic treatment and environmental support (Anastopoulos et al., 1991; The-MTA-Cooperative-Group, 1999a). The two most commonly used and effective therapies for the management of ADHD in children are stimulant medication therapy and training parents in behaviour management skills, i.e., behavioural family intervention (Anastopoulos et. al, 1991). It is how parents of children with behavioural problems view these two treatments, more specifically the latter, which provides the focus for the present research.

Both of these treatments (stimulant medication and behavioural family intervention) have a united goal of creating a better fit between the ADHD child and the demands made by his or her social environment. As mentioned earlier, these include areas such as classroom and educational requirements, establishing and maintaining good peer relationships, family situations, and self-esteem issues. Treatments must address the child's behaviour in all of these areas, in order to be deemed beneficial.

Psychostimulant treatment

Although a relevant part of this research, psychostimulant medication is not the main focus of this study and has been reviewed elsewhere (Miller, 1999; Pilska, 2000; Sayal, 1997; The-MTA-Cooperative-Group, 1999a). Briefly, stimulant drugs such as methylphenidate (commonly known as Ritalin), and d-amphetamine (known as Dexedrine) alter the symptoms experienced by the child, such as inattention, impulsivity, and overactivity, by enhancing the

action of certain neurotransmitters believed to be responsible for the neuropsychological functions controlling these behaviours (Anastopoulos et al., 1991).

Psychostimulant medication is currently the most frequently used (and most controversial) treatment for ADHD symptoms, with overseas research suggesting that methylphenidate (Ritalin) is the prescription of choice of paediatricians (Copeland, Wolraich, Lindgren, Milich, & Woolson, 1987). Although stimulants can lead to significant behavioural improvements in a large percentage of children with ADHD (Anastopoulos et al., 1991; Barkley, 1998), psychostimulants may be ineffective or inappropriate for treating a substantial number of children with ADHD because of undesirable side-effects, or may be insufficient alone for meeting the full range of the individual's clinical needs, such as late afternoon and early evening hours at home when the drug is inactive (Anastopoulos et al., 1996). Medication is known to reduce negative peer interactions dramatically, however, increases in positive social behaviour are far less apparent (The-MTA-Cooperative-Group, 1999a).

It has also been suggested that psychotropic medication may decrease self-esteem (Whalen & Henker, 1986, cited in Borden & Brown, 1989) and give children a sense that their behaviour is externally controlled (Rosen, O'Leary & Conway, 1985, cited in Borden & Brown, 1989). Parents whose children are prescribed medication may also come to believe their children cannot control their own behaviour, which may have secondary negative effects on children's self-concepts and behaviour (Borden & Brown, 1989).

A recent study by the MTA Co-operative Group (1999a) has revealed some controversial findings, challenging many researchers' beliefs on the effects of medication, and combined treatments on ADHD symptoms. The MTA Co-operative Group (1999) conducted a study that compared medication, behaviour therapy, a combination of both treatments, and standard community care. They found that children in the combined treatment and medication

management groups showed significantly greater improvement than those given intensive behavioural treatment and community care. The study also found that although combined and medication management did not differ significantly in any direct comparisons of core ADHD symptoms, combined treatment did show advantages in other symptoms including oppositional/aggressive behaviour, internalising symptoms, teacher-rated social skills, parent-child relations and reading achievement.

One of the benefits found in this study is that combined treatment outcomes achieved results similar to medication management but using significantly lower medication doses than the medication management alone (often a concern of parents and clinicians). In addition, more than 75% of participants given behavioural treatment alone successfully maintained improvements without medication throughout the study, giving further weight to the effectiveness of behavioural interventions. In a further article, the MTA Co-operative Group (1999a) found that children with ADHD who have comorbid disorders, and those with fewer family resources are more likely to benefit from combined and behavioural treatments.

Both studies expressed the view that as with any other chronic condition, the need for active treatment for ADHD may not be consistent, and perhaps it is the behavioural interventions that help families cope with their child's disorder (The-MTA-Cooperative-Group, 1999a, 1999b). By using parent training to make the necessary life accommodations to optimise family functioning, it is likely that behavioural treatments enhance parent-child relations more than medication alone. In fact, parent satisfaction scores for combined treatment and behavioural treatment in the MTA Group study (1999a) were significantly higher than those of medication management rating scores. It is also important to note that their study used a carefully crafted medication management, that was found to be superior to

community care treatments, despite the fact children in the community care group were also receiving some type of stimulant medication.

Thus, an exclusive reliance on stimulant medication alone is not recommended for many families, but should be part of a multimodal intervention programme which is the current criterion standard for ADHD interventions (The-MTA-Cooperative-Group, 1999a), that includes parent training or behavioural family intervention, as well as modifications to the child's classroom experience (Anastopoulos et al., 1991).

Behavioural Family Intervention

Family intervention, either alone or in combination with other intervention strategies (such as the aforementioned stimulant medication therapy), is often used in the treatment of children with ADHD. Behavioural family intervention has been shown to lead to improvements in children diagnosed with ADHD, as it does with conduct disorder and behaviour problems (Estrada & Pinsof, 1995). Research by Barkley (1998), Abikoff (1987) and McMahon (1994) has found that parent and teacher training, behaviour therapy, psycho-stimulant medication, and cognitive-behaviour therapy are all useful, with combined interventions appearing the most effective. Because ADHD has such a large number of symptoms associated with the disorder, the treatment must typically be multimodal and multidisciplinary in nature (Anastopoulos et al., 1991; Estrada & Pinsof, 1995). When behavioural family intervention is successful, parents feel better equipped to manage their child's behaviour, especially at times when the effects of medication or other treatments are absent (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993).

Triple P - Positive Parenting Programme

An example of a behavioural family intervention is found in Triple P - a Positive Parenting Programme. This is a multilevel parenting and family support strategy designed to reduce the prevalence of behavioural and emotional problems in preadolescent children. This Programme uses a multilevel system, which provides five levels of intervention of increasing strength and engagement with the family (Sanders, 1999). These interventions include a universal population-level media campaign targeting all parents, two levels of brief primary care consultations targeting mild behaviour problems, and two more intensive, professionally delivered parent training and family intervention programmes for children at risk of more severe behavioural problems.

The programme aims to provide the minimal intervention required by the parent(s) in order to deflect his or her child away from the path to more serious problems later in life. The key to the programme is teaching self-regulation of parental skill, and the programme itself uses a number of different delivery modes for its interventions, including individual face-to-face, group, telephone assisted, and self-directed programmes to ensure the intervention is tailored to the individual requirements of families (Sanders, 1999).

By providing parents with the skills to help his or her child regulate and manage his or her problem behaviour without outside intervention, after initial training, behavioural family intervention is a big step towards providing families with the capacity for the long-term treatment a child with a developmental disability requires, as discussed earlier.

Triple P staff in New Zealand have noticed however, a tendency of parents with children diagnosed as having ADHD to comment that the Triple P programme is not suitable for them because their child's behavioural problems are due to a physiological impairment (Steven Hayns, personal communication, February 10, 2000), Family intervention is not seen

to be beneficial by such parents. It seems likely that, in doing this, parents may be making attributions about the aetiology of ADHD (i.e., that it is predominantly neurological), and predictions about the efficacy of family interventions (that they will be ineffective with their children), which then lead them to dismiss Triple P as not being a suitable programme for children with ADHD.

This supports the findings by Reimers et al. (1995) that suggest that parental ratings of acceptability of behavioural interventions are influenced by the causal attributions they make about their children's behaviour "in particular parents who attribute their children's behavioural difficulties to be due primarily to genetic or medical causes would view environmentally based behavioural interventions as less acceptable." (Reimers et al., 1995, p. 172). In order to understand what it is that parents attribute the cause of their children's behaviour to, it is important to look at how attributions have been defined by previous research.

Focus on Attributions

Causal attributions are people's spontaneous judgements attempting to explain important, unexpected, or negative events in their lives, in order to help them understand their environments and thus make them more predictable (Jenson, Green, Singh, Best, & Ellis, 1998). Weiner (1986) highlights four sets of concepts that are central to understanding causal attributions. The first set involve perceived locus of control (i.e., whether individuals are internally or externally driven) stability of the cause, and its controllability. Secondly, people tend to attribute their success or failure to one or more of four causes: ability, effort, ease or difficulty of task, and luck. Thirdly, the explanations people give for things that happen to

them are often made in terms of emotion such as pride, gratitude, anger, shame and helplessness. Finally, these emotions are believed to be important mediators of behaviour.

In addition to Jenson et al.'s (1986) conceptual definition, Bugental, Johnston, New, & Silvester (1998) believe attributions to have been alternatively conceptualised as involving (a) memory-dependent knowledge structures (i.e., interpretative styles based on the parent's history), or (b) stimulus-dependent appraisal processes (i.e., interpretations dependent on information available in the immediate context).

Using these attribution interpretations, it may be inferred that perhaps parenting behaviour may be affected by parents' beliefs about why their children act as they do (Jenson et al., 1998). Weiner (1986) notes that attributions have been found to be linked with performance mediators. In successful conditions, favourable outcomes should be associated with attributions that are internal, controllable, global, and stable. In failure conditions, attributions that are specific and unstable should yield favourable outcomes. It has also been shown that when one's expectations are matched by the eventual outcome, stability attributions are invoked. Also, when individuals use stability attributions after an outcome, they expect similar outcomes in the future (Benson, 1989).

This is reflected in findings by Johnston & Freeman (1997) discussed later, who found that parents of children with ADHD see his or her child's behaviour as being uncontrollable by the child, internally caused and more stable over time, than do parents of children without behavioural disorders. Nevertheless, despite the fact these parents coping with ADHD do not appear to blame their children, they remain upset and frustrated by these negative behaviours and are just as likely to respond negatively to these behaviours as parents of children without behavioural problems. However, little research has been done regarding attributions made by parents who have children with emotional and behavioural disorders (Jenson et al., 1998),

although developmental and family researchers have begun to pay increasing attention to parental attributions in recent years (Bugental et al., 1998).

Acceptability of Behavioural Interventions

According to a recent study, acceptability and social validity of behavioural interventions for child behaviour problems has been the subject of an increasing number of research investigations (Reimers, Wacker, Derby, & Cooper, 1995). Although causal attributions have been studied for some years, there is little research on the effects of attributions on the acceptability of particular treatments. Reimers et al. (1995) reviewed previous studies showing a direct relationship between attributions and therapeutic outcome. In particular, a study by Watson (1986) found that parents who attributed the cause of the target behaviour to internal factors were significantly less involved in the treatment process.

In other research, mothers who expected environmental manipulations to have no effect on her child's behaviour invariably confirmed this expectancy unwittingly, either by failing to put the treatment into practice, or through implementing the treatment without integrity (Reimers et al., 1995). Thus, it seems more research is needed to look at how to make parents more receptive to different treatments, given that effective ADHD management cannot be achieved with one single therapy.

The existence of a number of different highly public theories, despite a lack of research to prove efficacy in some cases (as shown in the previous example of Feingold's (1975) poor diet and food additive theory), and material available to the public, has resulted in confusion for parents and their advisors. This confusion may lead to attributional errors about the causes of ADHD, and as a result, to the parents believing that behavioural family intervention may not be appropriate or beneficial to their situation.

Barkley (1998), in his extensive review of ADHD, concluded that the evidence strongly supports the importance of neurological and genetic factors in the aetiology of ADHD but he also strongly emphasised the role of environmental factors as contributing to ADHD and to its management. Barkley's excellent review of this incomplete and poorly integrated literature provides insight into how many people can be misinformed by contradictory findings. Sources of confusion for parents and practitioners may include the following: i) that ADHD is often over-diagnosed and therefore children with behaviour problems may mistakenly be labelled as ADHD; ii) parents and practitioners may mistakenly believe that behaviours with neurological bases are not modifiable; iii) parents and practitioners may not understand that children with ADHD are prone to developing conduct disorder in addition to ADHD and that this conduct disorder requires treatment in its own right. Thus, if the child does not have ADHD, the commonly prescribed stimulant treatment may be ineffective, yet, if the child does suffer from ADHD, the parent may not believe that behavioural family intervention would be a beneficial addition to treatment.

Furthermore, it is imperative that parents and practitioners determine what, if any, further disorders may coexist with a child's ADHD diagnosis (such as Conduct Disorder, anxiety, or even parental depression), as these disorders require separate treatment in their own right. In addition, how the diagnosis is derived may play a role in parental attributions about treatment of ADHD. For example, the particular professional to suggest or provide a diagnosis of ADHD (whether teacher, GP, psychologist etc.) may influence the attributions and expectations of the parent, including their willingness to consider treatments other than medication alone.

The attributional literature makes clear that people generally attribute negative happenings in their lives to causes that are external to them and uncontrollable. This concept

of locus of control is likely to play a role in parental attributions (Benson, 1989; Weiner, 1986). Parents may overemphasise the medical and physiological aspects of ADHD in order to decrease any feelings of guilt, helplessness and dissonance they may be experiencing. Children with ADHD impose increased care-taking demands on caregivers throughout childhood and adolescence (Cunningham and Barkley, 1979, cited in (Anastopoulos et al., 1993); Barkley, 1992). These parents often see themselves as less skilled and less knowledgeable, and derive less satisfaction from their parenting efforts (Johnston & Mash, 1993). Anastopoulos et al, (1992) found that parenting stress levels are extremely high within families of children with ADHD, although this study found that this stress was not entirely related to the child's ADHD, but also various other child, parent and family-environment circumstances. The study found that parents who may suffer from increased stress (whether due to solely to their child's behavioural difficulties or their own psychological and/or health difficulties) may inadvertently ignore positive child behaviour, unintentionally overreact to negative child behaviour, or respond to both inconsistently, or both. This is likely to exacerbate the behaviour problems of a child with ADHD and/or Conduct Disorder, which will increase parental stress, and so the cycle continues (Anastopoulos et al., 1992). Thus, as these parental difficulties have been shown as a direct consequence of raising a child with ADHD, successful behavioural family intervention may improve parental functioning by helping the parent gain better control over his or her child's behaviour, which would logically improve parent self-efficacy and satisfaction, therefore reducing stress (Anastopoulos et al., 1993).

This further highlights the need for both clinicians and parents to examine the benefits of including a treatment such as behavioural family intervention when exploring therapeutic options. Behavioural family intervention works on the principle that children's behaviour may

be caused by patterns of interaction between the child and his or her parents or caregivers, which have accidental, unintended negative consequences. Parents are thus taught how to use specific procedures to alter the ways they interact with their child. Accordingly, an important aspect of any treatment process must surely be parental competence (both actual and perceived), as previously discussed with regard to parent expectation of outcome being linked to treatment implementation (Reimers et al., 1995).

Johnston & Mash (1989) has reported several studies that suggest a link between parental cognitions and parental behaviour (Newberger and Cook, 1983; Azar et al., 1984). Parental cognitions obviously play a huge role in parent-child relationships. A significant aspect of these cognitions is that of parenting self-esteem, which includes "both perceived self-efficacy as a parent and the satisfaction derived from parenting" (Johnston & Mash, 1989, p. 167). Self-efficacy has been defined by Bandura (1982) as expectations for successful coping in upcoming situations, and when put into a parenting context, this refers to the extent in which a parent feels confidence or competence in their ability to deal with difficult child behaviours or problems. Bugental (1987) found that caregivers with low levels of perceived control are sensitised to and cope ineffectively with difficult child behaviour (cited in (Johnston & Mash, 1989). Cunningham and Barkley (1979) found that parents of children with ADHD often become overly directive and negative in their parenting style (cited in Anastopoulos, 1996). Also related to the aspect of efficacy is the degree of satisfaction derived from the role. Low levels of perceived efficacy are correlated with poor persistence, depression, self-blaming attributions (Bandura, 1982) and diminished role satisfaction (Johnston & Mash, 1989). Johnston and Mash (1989) suggest that parenting self-esteem can be measured and that it is associated with both child behaviour and parental functioning.

Taken together, these studies suggest that both actual parental competence and perceived competence may play a role in how parents view different treatments for his or her child's behavioural disorders. Thus, this study included the Parent Sense of Competence (PSOC) scale (also known as the Being a Parent scale) which contains two subscales measuring Efficacy and Satisfaction. (Mash & Johnston, 1983) compared PSOC scores in parents of younger and older hyperactive and normal children. Their results found parents of hyperactive children obtained scores lower than those obtained by parents of normal children. The study also found PSOC scores, particularly Satisfaction scores, were related to parental perceptions of child problems.

Information available to the public may exacerbate misattributions made regarding causality and treatment options for ADHD. A survey of representations of ADHD in literature (Leon, 1997) found differences between the empirical and child related literatures on descriptions of aetiology, prognosis, comorbidity and family relationships. An education package for teachers instigated by paediatricians and devised by a American national ADHD organisation attempted to change teachers' beliefs about poor parenting, and diet as causal factors and to increase the acceptability of stimulant medication as a treatment (Barbaresi & Olsen, 1998). It did not address beliefs about the efficacy of intervention in family or school settings, which research addressed earlier has shown to be an integral part of treatment (Anastopoulos et al., 1991).

There is not a particularly comprehensive literature on parental attributions about ADHD and its management. Many of the studies make cross-cultural comparisons or consider psychotherapy or medication as the treatment options. What research there is supports the notion that parents of children with ADHD may make attributions that make it more difficult for them to access interventions and use them effectively. Parents of children with ADHD are

more likely to see their own efforts as causing their children's best behaviour, rather than their worst. Thus, a child's worst behaviour is more likely to be explained by the parent as his or her child's lack of effort or medication effects (Jenson et al., 1998; Johnston, 1998). It may be that these parents are medicalising their children's worst behaviour, leading to a sense of helplessness and pessimism about the efficacy of intervention.

Similarly, Johnston and Freeman (1997) found that parents of children with ADHD were more likely than parents of children without significant behavioural problems to see negative aspects of children's behaviour as more internally caused, less controllable by the child, and more stable. It has been reported that parents or teachers of children of ADHD are frequently unclear about what constitutes a diagnosis of ADHD, especially as symptoms can vary from child to child, and many parents cite non-compliance, emotional immaturity, or unsatisfactory academic progress as behaviours that led them to believe their child has ADHD (Anastopoulos, 1996). Although these characteristics are associated with ADHD, they are not the core features of the disorder, as discussed earlier. Thus, in order to encourage the most effective treatment possible for children with ADHD, it seems crucial to ensure parents and teachers are given accurate and comprehensive guidelines on what constitutes the disorder.

Barkley (1998), in defining the components of the ideal family intervention for children with ADHD, underscores the importance of targeting parental attributions. He describes a treatment programme used by Cunningham, Bremner and Secord-Gilbert (1997), called COPE (The Community Parent Education Programme), which encourages parental cognitive strategies that promote an accurate interpretation of the child's behaviour, a longer term perspective on change and a sense of personal control. Barkley (1998) mentions attributional research which suggests that parents' explanations regarding the causes of children's behaviour exert an important impact on their emotional and disciplinary responses

(Baden & G.W., 1992; Johnston & Freeman, 1997), but the treatment programme that Barkley describes does not specifically address attributions about the aetiology of and treatment efficacy for ADHD.

This present study aimed to assess New Zealand parents' attributions about the aetiology of their children's ADHD and their predictions about the efficacy of family interventions, thus attempting to determine their receptivity to different treatment options. The aim is to identify attributions about ADHD that may hinder parents from wanting to access family interventions, or that may prevent their gaining full benefit from their participation in such treatments. (Cunningham, Bremner, & Secord-Gilbert, 1997), notes that where parent training programmes are available, attendance is limited, with a high number of dropouts, and participants often display resistant behaviour (arriving late, neglecting homework, missing appointments). It is highly likely that parental attributions can be used as a predictor of openness to behavioural treatments for behavioural disorders Reimers et al., 1995; Borden & Brown, 1989). These findings regarding attributions could be used to allow facilitators and promoters of family interventions, such as the Triple P programme, to modify their material in order to enhance access to, and acceptability of family intervention training for parents of children of ADHD.

In addition, the present study sought to investigate the relationship between parental attributions regarding the causal aetiology of behavioural disorders, and how these attributions might affect treatment acceptability and likelihood of treatment uptake, using a questionnaire based on Kazdin's (1980) Treatment Evaluation Inventory (TEI). Kazdin (1980) believed that understanding judgements of the social validity of a behaviour change treatment can be based on the assessment of the treatment's overall acceptability. "These judgements are likely to involve assessing the fairness, reasonableness, and intrusiveness of

the treatment, its goodness of fit to the problem addressed, and the extent to which the treatment meets conventional expectations about professional treatment in general" (Blampied & Kahan, 1992, p.401)

The study also measured parents' sense of competence with the Parent Sense of Competence (Being a Parent) scale as previously discussed. This scale provides some indication of how confident a parent is likely to feel in implementing a treatment such as Behavioural family intervention, which in turn provides an indication of parental competence in implementing treatment. This study was specifically investigated in relation to ADHD. It was hypothesised that parents who attribute the causal symptoms of their child's ADHD to physiological or biological aspects will rate the acceptability of behavioural treatments recommended for their children as lower than those who have causal attributions which are more environmental and/or less biological.

METHOD

Participants

One hundred and sixty booklets were distributed to parents via various agencies. A total of 50 participants were included in this study. The participants were: an ADHD group consisting of 1 father with his ADHD child in a defacto relationship, and 34 mothers of children with ADHD (26 married mothers with their biological child, 1 single mother with her adopted child, 1 grandmother with an adopted child, 2 mothers with a biological child in a defacto or step-parent relationship, 4 single mothers with a biological child, 1 single mother with an adopted child); and 15 control parents of children with no behavioural problems (14 married mothers with their biological child, and 1 single mother with her adopted child).

Originally, it was this researcher's intention to obtain a third group of parents with children who experience severe problem behaviours, but have *not* been diagnosed with

Attention Deficit-Hyperactivity Disorder, for example, those children experiencing symptoms evident in separate disorders such as Conduct Disorder or Oppositional Defiant Disorder. Thus, parental attributions could be compared to measure whether it is generally severe behavioural problems of the child, or specifically ADHD-type symptoms, that influence a parent's willingness to consider and engage in therapies such as behavioural family intervention. However, the Privacy Act made gaining access to these children and their parents as a student researcher impossible. Given the amount of difficulty experienced in recruiting the ADHD group alone, the idea of using this second control group unfortunately had to be relinquished as it became beyond the scope of this study.

Due to Privacy Act restrictions preventing these representatives from providing names and addresses of clients, each agency was contacted by the researcher and asked if they would be willing to approach ADHD parents on her behalf, and distribute the questionnaire booklets to those parents that agreed to participate. These agencies were the Pakuranga Children's Health Camp, Auckland; the Christchurch ADHD Support Group; the Chomondley Home School, Christchurch; and the ADHD Association Incorporated, Auckland. The control group of non-ADHD parents was recruited from parents with children attending Opawa Primary School in Christchurch, through the principal (who agreed to distribute booklets to parents of children without known behavioural problems).

All parents completed the attributional measures and 3 rating scales, presented in a booklet that was distributed via the different agencies involved. Only one parent from each family was asked to complete the questionnaire booklet.

Measures

Attitudes and Attributions Questionnaire (Appendix D)

Each parent completed a questionnaire specifically designed for this study. It consisted of a number of demographic questions (such as name, age, address of both child and caregiver, and relationship of child with caregiver). Subsequent questions about the caregiver's beliefs about the aetiology of his or her child's disorder and treatment appropriateness attempted to measure the parent's receptivity to behavioural family intervention as a form of treatment for his or her child's disorder. These were presented using a 7 point Likert scale (1 "not at all true/effective" to 7 "very true/effective"), based on Kazdin's (1981) Treatment Evaluation Inventory (TEI).

An basic explanation of Behavioural Family Intervention and its dimensions was presented before the questions regarding the treatment, and parents were asked to give the answer on the 7-point scale that best indicated their feelings about the validity of the statements, based on the definition of behavioural family intervention they had been given. In the parent questionnaires, the term "Family Therapy" was used to indicate behavioural family intervention, as "Family Therapy" is an easily recognised term parents can identify with, particularly those from less educated backgrounds. For the purpose of this description of the Attitudes and Attributions questionnaire, the term "family therapy" will be used, as this was the term presented to parents participating in the study.

Three sub-scales of parental attributions about family therapy/behavioural family intervention were extracted from questions 4-15 of the Attitudes and Attributions questionnaire.

- Firstly, *Acceptability* of family therapy [questions (4) *how acceptable do you find family therapy for your child's behaviour?* (5) *how willing would you be to carry*

out family therapy yourself to change your child's problems?, (8) *how much do you like the procedures used in family therapy?*, (14) *overall, what is your general reaction to family therapy?*, with possible scores ranging between 4-28].

- Secondly, perceived *Effectiveness* of family therapy [questions (9) *how effective is family therapy likely to be for you?*, (10) *how likely is family therapy to improve your child's behaviour?*, (11) *how effective do you think family therapy would be when used as a sole treatment for ADHD or other behavioural problems?*].
- Thirdly, *Recommendability* of family therapy [questions (6) *how cruel or unfair do you find family therapy?*, (7) *how consistent is family therapy with common sense or everyday notions about what treatment should be?*, (15) *would you recommend family therapy to other parents who are experiencing child behaviour problems similar to those you have experienced?*. Both *Effectiveness* and *Recommendability* have possible scores ranging between 3-21.
- Finally, all three sub-scales (Acceptability, Effectiveness and Recommendability) were combined with questions 12 (*how effective do you think family therapy would be used in combination with medication as a treatment for ADHD or other behavioural problem?)* and 13 (*how effective do you think medication alone would be as a treatment for ADHD or other behavioural problems?),* to create a *Total Acceptability* scale with scores ranging between 12-84.

Eyberg Child Behaviour Inventory (Eyberg & Robinson, 1983)

The second scale in the booklet was the Eyberg Child Behaviour Inventory (ECBI), one of the most widely used parent-rating scales of conduct-problem behaviours (McMahon & Forehand, 1988). It is a 36 item, multidimensional measure of parental perceptions of

disruptive child behaviour, and has acceptable reliability and validity. This scale was used to assess the severity of each child's behavioural problems, and allow placement into one of the two designated groups.

The ECBI was designed as a consistent measure for children aged between 2 and 17 years suffering conduct-problem behaviours. It is predominantly used as a screening measure to differentiate normal and conduct-problem children and adolescents, and is sensitive to the effects of intervention to allow tracking of behaviour over time (Burns & Patterson, 1990). It is both simple to administer (which was important in this study as the questionnaires were presented in booklet form which parents completed at home) and score, and allows discrimination between Oppositional Defiant Disorder (ODD), Attention-Deficit Hyperactivity Disorder (ADHD), and Conduct Disorder (CD) in children.

The ECBI contains descriptions of 36 behaviours commonly reported by parents of behaviourally disruptive children. Parents rated the frequency of each behaviour on a seven-point Likert scale (1 equals *never*, 2 and 3 equal *seldom*, 4 equals *sometimes*, 5 and 6 equal *often*, and 7 equals *always)*. In addition, the parent rated whether the specific behaviour is currently a problem for them, circling Yes or No for each behaviour (i.e., Is this behaviour a problem for you?). The 36 items on the ECBI provide two summary scores: an INTENSITY score (being the total frequency of occurrence for the 36 behaviours) and a PROBLEM score (the total number of the 36 behaviours that are problems, i.e., "Yes" responses). The range for the INTENSITY score is 36 to 252, and the range of the PROBLEM score is 0 to 36. According to Eyberg and Robinson (1983), cut-off scores when screening community samples for conduct problems are 132 on the INTENSITY scale, and 15 on the PROBLEM scale.

Revised Conners' Parent Rating Scale [CPSR-R; Conners, 1997 #61]

Parents also filled in the CPRS-R scale, which provides comprehensive symptom coverage for ADHD and related disorders. It has an updated item content to that of the original Conners' Parent Rating Scale, which reflects recent knowledge and developments concerning behaviour problems (Conners, Sitarenios, Parker, & Epstein, 1998). It involves parents rating each of the 48 items, using 4-point Likert scales (ranging from 0 for 'not at all true' to 3 for 'very much true').

Conners et al. revised the scale in 1998 in order to provide better psychometric properties than previous versions. The Revised version also has fewer items, yet provides a more thorough assessment and specific focus on ADHD related behaviours than the original scale, and reliability estimates also suggest that accurate measures of parental perceptions may be obtained. The CPRS-R factor structure represents several categories of behaviour which are either directly related to, or comorbid with ADHD symptoms, which allows a clinician (or researcher) to identify problem domains that can provide the focus during an interview. Another useful property of the CPRS-R is that it more accurately distinguishes Conduct Disorder and Oppositional Defiant Disorder from ADHD characteristics.

It is also deemed preferable to the often more popular parent rating scales, such as the Child Behavior Checklist (CBCL) and the Revised Behavior Problem Checklist [RBPC] (Conners et al., 1998). Although the CPRS-R has comparable psychometric properties, it measures ADHD and its associated behaviours more distinctively and comprehensively. This is because the CPRS-R is the only scale containing scales related to both domains of ADHD behaviours, namely inattention and hyperactivity/impulsivity.

Parent Sense of Competence Scale [PSOC; Johnston, 1989 #52]

In order to rate parent satisfaction and efficacy, the PSOC scale was used. Parents were required to complete the 17 item scale which measures two dimensions of parenting self-esteem: Efficacy, which reflects the parental competence, problem solving ability and capability in the parenting role; and Satisfaction, reflecting parenting frustration, anxiety and motivation (Johnston & Mash, 1989).

Procedure

Booklets were distributed through agencies and support groups (see list in *Participants* above) that were contacted in advance and asked whether they would be willing to approach parents of children with ADHD and administer the questionnaires to those parents or caregivers who expressed interest.

Once parents had completed the questionnaires, they sent them back in a stamped self-addressed envelope that was provided with the booklet. When returned questionnaires were received, the researcher mailed parents a thank you letter and an Instant Kiwi lottery ticket as a token of appreciation.

RESULTS

FAMILY DEMOGRAPHICS *(Appendix C, Table 1)*

The mean age for the 35 children with ADHD was 11.63 years, with a standard deviation of 3.12. The youngest child in the ADHD group was 5 years; the oldest was 17 years. The 15 children with no behavioural difficulties (non-ADHD group) had a mean age of 9.47 years, with a standard deviation of 1.96. The youngest child in this control group was 7 years; the oldest child was 14 years. The age difference between the two groups was not significant.

Thirty (86%) of 35 parents in the ADHD group were of NZ European descent, 2 (6%) parents were Maori, 1 (3%) parent was Chinese, and 2 (6%) parents did not report their ethnicity. All 15 (100%) parents in the non-ADHD group were of NZ European descent.

Five (14%) of the 35 children in the ADHD group lived with a single parent (all 5 with single mothers). Twenty-six (74%) children with ADHD lived with both parents (25 with their biological parents and 1 with adoptive parents). Three (9%) of the children with ADHD lived with 1 parent and a stepparent or defacto partner (1 biological mother and stepfather, 1 biological mother and defacto father, and 1 biological father and defacto mother). One (3%) child lived with his grandmother. One (7%) of the 15 children in the non-ADHD group lived with his single mother, and the remaining 14 (93%) children lived with both biological parents. Thirty-two (91%) of the 35 children with ADHD were the parents' biological child and the remaining 3 (9%) children with ADHD were living with adoptive parents.

All 15 (100% of the non-ADHD group were living with their biological parent or parents.

ATTITUDES AND ATTRIBUTIONS QUESTIONNAIRE

Diagnosis Details (Table 2)

Of the 35 children in the ADHD group, 32 (91%) were male and 3 (9%) were female. These numbers reflect the higher ratio of males in clinically referred samples [American-Psychiatric-Association, 1994 #36; (Barkley, 1998). In the non-ADHD group of 15 children, 10 (67%) were male and 5 (33%) were female.

Table 1: *Parent and Child Demographics*

	ADHD (n=35)				NON-ADHD (n=15)			
VARIABLE	**M**	**SD**	**Min**	**Max**	**M**	**SD**	**Min**	**Max**
Child age (in years)	11.63	3.12	5.00	17.00	9.47	1.96	7.00	14.00
Parent age (in years: n=31)	44.35	5.23	32.00	53.00	40.67	2.35	37.00	45.00
PARENT ETHNICITY	***COUNT***		***% of all cases***		***COUNT***		***% of all cases***	
NZ European	30		86%		15		100%	
Maori	2		6%		0		0%	
Pacific Island	0		0%		0		0%	
Chinese	1		3%		0		0%	
Missing data	2		6%		0		0%	
CHILD LIVES WITH								
Mother OR Father	5		14%		1		7%	
Both Parents	26		74%		14		93%	
1 Parent + 1 step/defacto	3		9%		0		0%	
Other Caregivers	1		3%		0		0%	
CHILD IS								
Biological	32		91%		15		100%	
Adopted	3		9%		0		0%	
Fostered	0		0%		0		0%	

Children with ADHD

In the ADHD group, 32 (91%) of the 35 children had been clinically diagnosed with ADHD (28 with ADHD only; 4 with ADHD and at least one other disorder). Three (9%) of the children had not been diagnosed with ADHD, but these 3 children all met the clinical cut-off scores for ADHD on both the EYBERG and CPRS-R.

Twenty (57%) children in the ADHD group were receiving treatment, 10 (29%) were not currently receiving any treatment, and 5 participants (14%) did not report if their children were receiving treatment. Of these 20 children receiving treatment, 13 (37%) were on methylphenidate (Ritalin) only, 1 (3%) was on other psychostimulants (risperidone), and 6 (17%) were on Ritalin and at least one other treatment. The remaining 15 children (43%) in the ADHD group were either not receiving any treatment, or did not provide information.

Thus, a total of 19 (54%) of children in the ADHD group were receiving Ritalin as a treatment.

Table 2: *Attitudes and Attributions Questionnaire – Diagnosis Details*

	ADHD (n=35)		NON-ADHD (n=15)	
VARIABLE	***COUNT***	**% of all cases**	**COUNT**	**% of all cases**
MALE	32	91%	10	67%
FEMALE	3	9%	5	33%
ADHD				
Diagnosed: Y	27	77%		
Diagnosed: N	3	9%		
ADHD + at least 1 other disorder	5	14%		
Total ADHD	**32**	**91%**		
TREATMENT				
Yes	20	57%		
No	10	29%		
Missing	5	14%		
TREATMENT TYPE				
Ritalin only	13	37%		
Ritalin + at least 1 other treatment	6	17%		
Other psychostimulants	1	3%		
No treatment	10	29%		
Missing data	5	14%		
Total Ritalin	**19**	**54%**		

QUESTIONS 1-3: *Parent beliefs about causes of their child's problem behaviour (Table 3)*

This questionnaire was designed to attempt to gauge parents' beliefs about the causes of their child's behaviour, with specific regard to ADHD. The questionnaire contained 15 questions about the caregiver's beliefs about the aetiology of his or her child's disorder and treatment appropriateness, attempting to measure the parental receptivity to behavioural

family intervention as a form of treatment for his or her child's disorder. All questions were answered on a 7 point Likert scale (1 equals *not at all true* and 7 equals *very true*), thus higher scores indicated endorsement of agreement, truth or effectiveness.

The mean ratings on Question 1, the extent to which parents believed his or her child to have ADHD, clearly differentiated the parents of children with ADHD (M=6.03 [SD=1.52]) from the parents of children without ADHD (M=1.00 [SD=0.00]), ($t[48]= -19.52$, $p<0.01$).

A significant difference was also found for Question 2, the Biological Causation question, on which parents rated the extent to which they saw their child's behavioural problems as being of a biological nature. Parents of children with ADHD reported a mean score of M=5.03 (SD=2.06), while the mean score for parents of children without ADHD was M=1.33 (SD=0.90), a significant difference ($t[48]= -8.81$, $p<0.01$). Parents of children with ADHD thus consistently rated their child's problems as being due to biological causes, while non-ADHD parents did not endorse this view.

Question 3 reflected parent beliefs about the environmental causes of their child's behaviour - there was no significant difference between parent groups.

Attitudes and Attributions Questionnaire Sub-scales *(Table 4)*

Three sub-scales of parental attributions about behavioural family intervention ("family therapy") were extracted from questions 4-15 of the Attitudes and Attributions questionnaire. These were *Acceptability* of family therapy (questions 4, 5, 8, 14, with possible scores ranging between 4-28); perceived *Effectiveness* of family therapy (questions 9, 10, 11); and *Recommendability* of family therapy (questions 6, 7, 15), both with possible scores ranging between 3-21. In addition, a Total Acceptability score was computed consisting of the

3 sub-scales plus questions 12 and 13, with possible scores ranging between 12 and 84. All 4 sub-scales had significant internal (*Table 9*).

As can be seen in Table 4, when the mean scores of the three sub-scales were compared between the ADHD group and the non-ADHD group, while parents of children with ADHD consistently rated behavioural family intervention lower than did parents of children without ADHD, no significant differences were found. ADHD parents had a mean score of 14.89 (SD=4.66) for Acceptability compared with 16.53 (SD=3.72) of non-ADHD parents. On the Effectiveness sub-scale, ADHD parents had a mean score of 10.34 (SD=4.55), compared with non-ADHD parents mean score of 12.43 (SD=3.96). The Recommendability mean score for ADHD parents was 16.63 (SD=3.33), compared with 18.07 (SD=2.89) in the non-ADHD parent group. The ADHD parent group had a Total Acceptability mean score of 51.43 (SD=12.77) compared with the non-ADHD parents' score of 54.87 (SD=10.88).

Table 3: *Attitudes and Attributes Questionnaire, q. 1-3*

	ADHD (N=35)	NON-ADHD (N=15)		
VARIABLE	**Mean (SD)**	**Mean (SD)**	**t**	**p-value**
Q1	6.03 (1.52)	1.00 (0.00)	-19.52	<0.05
Q2	5.03 (2.06)	1.33 (0.90)	-8.81	<0.05
Q3	2.09 (1.31)	1.93 (1.28)	-0.38	0.71

***Q1**: My child has ADHD*
***Q2**: I believe my child's problems are due to biological causes (e.g. a brain abnormality, complications at birth etc.)*
***Q3**: I believe my child's problems are due to environmental causes (e.g. difficult home circumstances etc.)*

EYBERG BEHAVIOUR INVENTORY (ECBI) [*Table 5*]

This scale has two sub-scales, the first of behaviour INTENSITY (the total frequency of occurrence for the 36 behaviours) and the other is a PROBLEM sub-scale (the total number of the 36 behaviours that are problems, i.e., "Yes" responses).

In the ADHD group, 25 children (71%) were above the clinical INTENSITY cut-off of 132, and 10 (29%) children were below the cut-off. Twenty-four children (69%) in the ADHD group were above the clinical cut-off for the PROBLEM sub-scale, and 11 children (31%) were below. Thirty-four children (97%) in the ADHD group were above both the INTENSITY cut-off and PROBLEM cut-off. One child (3%) was above the INTENSITY cut-off with a score of 159, but below the PROBLEM cut-off, with a score of 5.

None of the 15 (100%) children without ADHD made the cut-offs for either the INTENSITY or PROBLEM sub-scales.

Table 4: *Sub-Scales of Attitudes and Attributions Questionnaire*

	ADHD (n=35)	*NON-ADHD* (n=15)		
VARIABLE	**MEAN (SD)**	**MEAN (SD)**	**t**	**p-value**
A (max = 28)	14.89 (4.66)	16.53 (3.72)	1.22	0.23
E (max = 21)	10.34 (4.55)	12.43 (3.96)	1.53	0.13
R (max = 21)	16.63 (3.33)	18.07 (2.89)	1.34	0.17
TOTAL A (max = 84)	**51.43 (12.77)**	**54.87 (10.88)**	**0.91**	**0.37**

A: ACCEPTABILITY: Questions 4, 5, 8, 14
E: EFFECTIVENESS: Questions 9, 10, 11
R: RECOMMENDABILITY: Questions 6, 7, 15
TOTAL A: (A+E+R+ q.12 –13)

CONNERS PARENT RATING SCALE – Revised (CPRS-R) *(Tables 6&7)*

The CPRS-R contains 4 sub-scales: <u>*Oppositional*</u> behaviours – e.g. *angry and resentful, argues with adults* (6 items); <u>*Cognitive Problems/Inattention*</u> behaviours – e.g. *difficulty doing or completing homework, fails to complete assignments* (6 items); <u>*Hyperactivity*</u> behaviours – e.g. *is always "on the go" or acts as if driven by motor, hard to control in malls or while grocery shopping* (6 items); and <u>*ADHD Index*</u> behaviours – e.g.

inattentive, easily distracted, short attention span, gets distracted when given instructions to do something (12 items).

Raw scores are converted to t-scores by plotting them on the profile form provided with the scales, based on child age and gender. Generally, higher t-scores (and raw scores) are associated with a greater number and/or frequency of reported problems. T-scores of 61 – 65 are usually understood to indicate a possible significant problem, and scores of 65 and above are understood to indicate a clinically significant problem. Therefore, a t-score of 61 was the cut-off used for each of the CPRS-R sub-scales in this study, and a subsequent t-score cut-off of 65 was also included. In each of the sub-scales, data were missing for one child (3% of the ADHD sample), thus percentages in the following four sub-scales analyses will sum to 97%.

Table 5: Eyberg Child Behaviour Inventory (ECBI)

	ADHD (n=35)		*NON-ADHD* (n=15)	
VARIABLE	**COUNT**	**% of all cases**	**COUNT**	**% of all cases**
INTENSITY				
Clinical cut-off: No	10	29%	15	100%
Clinical cut-off: Yes	25	71%	0	0%
PROBLEM				
Clinical cut-off: No	11	31%	15	100%
Clinical cut-off: Yes	24	69%	0	0%

- *Oppositional Sub-scale (OPP.):*

Twenty-two (63%) of the children with ADHD were above the cut-off on the OPP. Scale, and 12 (34%)were below. In the control group, 14 children (93%) were below the cut-off, and 1 child (7%) was above the cut-off with a t-score of 62.

When the cut-off was changed to the t-score of 65, 20 (57%) of the scores of children with ADHD still indicated a clinically significant problem, while 14 (40%) did not. All 15 (100%) of the children without ADHD were under the cut-off of 65.

➢ *Cognitive Problems/Inattention Sub-scale (CP/I):*

Twenty-seven (77%) of the children with ADHD were above the cut-off on the CP/I scale, and 7 (20%) were below. In the non-ADHD group, 14 children (93%) were below the cut-off, and 1 child (7%) was above the cut-off with a t-score of 64.

When the cut-off was increased to a t-score of 65, 25 children (71%) were still in the clinically significant range, and (26%) children were not. All 15 (100%) of the children without ADHD were below the subsequent cut-off of 65.

➢ *Hyperactivity Sub-scale (HYP):*

Twenty-seven (77%) of the children with ADHD were above the cut-off on the HYP scale, and 7 (20%) were below. In the non-ADHD group, 14 children (93%) were below the cut-off, and 1 child (7%) was above.

With the t-score of 65, the same ratio of children (27:7) reached the cut-off. All 15 children (100%) were below the cut-off of 65.

➢ *ADHD Index Sub-scale:*

Thirty-one (89%) of the children with ADHD were above the cut-off on the ADHD index scale, 3 (9%) were below. In the non-ADHD group, all 15 children (100%) were below the cut-off.

With the cut-off set at a t-score of 65, 28 children (80%) in the ADHD group still made the clinical cut-off to indicate a significant problem and 6 (17%) did not.

PARENT SENSE OF COMPETENCE SCALE (PSOC) [*Table 8*]

The PSOC is a 17 item scale which measures two dimensions of parenting self-esteem: Efficacy, which reflects the parental competence, problem solving ability and capability in the parenting role; and Satisfaction, reflecting levels of parent frustration,

anxiety and motivation. There are 3 scales in total: SATISFACTION; EFFICACY; and a TOTAL score of the SATISFACTION and EFFICACY scales combined. All three scales had good internal reliability, as shown in the correlations in Tables 11 & 12.

The mean scores of the ADHD parents and the non-ADHD parents were compared for all three sub-scales. Two significant differences were found. For the SATISFACTION sub-scale of the PSOC, parents of children with ADHD had a significantly lower mean score, of 34.44 (SD=6.01), than the parents of children without ADHD, mean score of 39.13 (SD=4.81), [$t(48)=2.67, p<0.01$].

Secondly, when mean scores of the TOTAL sub-scale were compared, again the non-ADHD group had a higher mean score [M=67.26 (SD=5.75)], than ADHD parents [M=61.38 (SD=9.48)], [$t(48)=2.22), p=0.03$]

Table 6: *Conners' Parent Rating Scale (CPRS-R)* *Cut-off: t=61 - 64*

	ADHD (n=35)		NON-ADHD (n=15)	
VARIABLE	**COUNT**	**% of all cases**	**COUNT**	**% of all cases**
OPPOSITIONAL				
No	12	34%	14	93%
Yes	22	63%	1	7%
Missing	1	3%	0	0%
COGNITIVE PROBLEMS / INATTENTION				
No	7	20%	14	93%
Yes	27	77%	1	7%
Missing	1	3%	0	0%
HYPERACTIVITY				
No	7	20%	14	93%
Yes	27	77%	1	7%
Missing	1	3%	0	0%
ADHD				
No	3	9%	15	100%
Yes	31	89%	0	0%
Missing	1	3%	0	0%

Table 7: *Conners' Parent Rating Scale (CPRS-R)* *Cut-off t=65+*

	ADHD (n=35)		NON-ADHD (n=15)	
VARIABLE	**COUNT**	**% of all cases**	**COUNT**	**% of all cases**
OPPOSITIONAL				
No	14	40%	15	100%
Yes	20	57%	0	0%
Missing	1	3%	0	0%
COGNITIVE PROBLEMS / INATTENTION				
No	9	26%	15	100%
Yes	25	71%	0	0%
Missing	1	3%	0	0%
HYPERACTIVITY				
No	7	20%	15	100%
Yes	27	77%	0	0%
Missing	1	3%	0	0%
ADHD				
No	6	17%	15	100%
Yes	28	80%	0	0%
Missing	1	3%	0	0%

RELATIONSHIPS BETWEEN SCALE ITEMS:

To assess relationships between individual scale items and sub-scales, a series of Pearson product-moment correlations were computed. These revealed a number of significant relationships, as can be seen in Tables 9-12

Attitudes and Attributions Questionnaire (AAQ) *(Tables 9&10)*

In the ADHD group, positive internal correlations (*r*'s between 0.62 and 0.95; n=34, $p<0.05$) were found between Total Acceptability and all three sub-scales: Acceptability, Effectiveness, and Recommendability, indicating that if parents responded highly on one sub-scale, they were also likely to respond highly on the other sub-scales.

None of the sub-scales, however, correlated significantly with the Biological Causation question (Q2), which measured the extent to which parents believe their child's behavioural problems are due to biological causes. In the non-ADHD group, similar internal

positive relationships (r's between 0.61 and 0.86, n=15, $p<0.05$) were found between Total Acceptability and the three sub-scales, and again no significant correlations were found between the Biological Causation question and the ECBI, CPRS-R, or PSOC Scales.

Table 8: *Parent Sense of Competence Scale – PSOC (Being a Parent)*

	ADHD (n=35)	NON-ADHD (n=15)		
VARIABLE	**MEAN(SD)**	**MEAN (SD)**	**t**	**p-value**
Satisfaction	34.44 (6.01)	39.13 (4.81)	2.67	0.01
Efficacy	26.94 (4.56)	28.13 (4.05)	0.83	0.41
Total (S+E)	61.38 (9.48)	67.26 (5.75)	2.22	0.03

Table 9: *Correlations between Attitudes and Attributions Questionnaire Sub-Scales - ADHD GROUP (n=35)*

VARIABLE	Bio Cause (Q2)	Acceptability	Effective	Recommend	TOTAL Acceptability
Bio Cause (Q2)	---	-0.03	-0.07	0.16	0.06
Acceptability		---	0.74*	0.85*	0.95*
Effective			---	0.62*	0.87*
Recommend				---	0.85*
TOTAL Acceptability					---

*** $p<0.05$**

Table 10: *Correlations between Attitudes and Attributions Questionnaire Sub-Scales - NON-ADHD GROUP (n=15)*

VARIABLE	Bio Cause (Q2)	Acceptability	Effective	Recommend	TOTAL Acceptability
Bio Cause (Q2)	---	-0.17	-0.02	-0.17	-0.13
Acceptability		---	0.56*	0.61*	0.80*
Effective			---	0.61*	0.86*
Recommend				---	0.84*
TOTAL Acceptability					---

*** $p<0.05$**

AAS, ECBI, CPRS-R and PSOC Correlations

ADHD Group

In the ADHD group, a negative correlation (r= -0.54, n=34, p<0.05) was found between the Biological Causation question of the Attitudes and Attributions questionnaire and PROBLEM scores of the ECBI, indicating that the more a parent saw a child's problem behaviour as biologically caused, the less problematic they found the behaviour to be. A positive relationship (r=0.81, n=34, p<0.05) was found between the INTENSITY sub-scale, and PROBLEM sub-scale of the ECBI for ADHD parents, indicating the more frequent a child's negative behaviour, the more of a problem parents found it. Significant positive relationships (r's between 0.60 and 0.62; n=34, p<0.05) were also found between INTENSITY scores and the Oppositional sub-scale of the CPRS-R, and between PROBLEM scores and the Oppositional and Hyperactivity sub-scales of the CPRS-R. The CPRS-R CPI sub-scale had a positive internal correlation (r=0.69, n=34, p<0.05) with the ADHD sub-scale

The CPRS-R OPP scores correlated negatively with the PSOC SATISFACTION (r= -0.51, n=34, p<0.05) and TOTAL PSOC (r= -0.42, n=34, p<0.05) scores, indicating that the more oppositional the child, the less satisfaction the parent found in parenting. The CPRS-R HYP scores correlated negatively with the PSOC EFFICACY (r= -0.43, n=34, p<0.05) and TOTAL PSOG (r= -0.38, n=34, p<0.05) scores, indicating the more hyperactive the parent believed their child to be, the less competent they felt in their parenting role. Negative relationships (r's between –0.34 and –0.46; n=34, p<0.05) were found between the ECBI PROBLEM sub-scale and the PSOC SATISFACTION and EFFICACY sub-scales, as well as the TOTAL PSOC scores for both sub-scales, indicating that if parents scored highly on the ECBI PROBLEM scale, their SATISFACTION and EFFICACY scores would be low as they gained less gratification from their parenting experience.

As expected, positive internal relationships (r's between 0.51 and 0.90; n=34, $p<0.05$) were found between the PSOC sub-scales SATISFACTION, EFFICACY and TOTAL PSOC.

A discriminant function analysis was performed to determine whether treatment use could be used to predict how much of a problem a parent found his or her child's behaviour. Groups were constructed for PROBLEM scores of the ECBI on the basis of the clinical cut-off of 15. Cases with a score of 15 or above formed a group of HIGH problem effects, and those cases with scores below 15 formed a subsequent group of LOW problem effects. Five cases were removed from the analysis due to missing data, thus N=45.

A standard discriminant function analysis procedure of TREATMENT responses (i.e. *Is your child currently receiving treatment for ADHD*) was significant, [Wilks'λ=0.79, $F(1, 43)=11.54$, $p<0.01$], and provided correct classification of 73% of the cases from the TREATMENT model. Six cases in each group (either HIGH or LOW) were wrongly classified as being in the other group. Essentially, only 6 out of 20 children receiving medication were incorrectly classified as not receiving treatment when in fact they were, and 6 of 25 were incorrectly classified as receiving treatment when in fact, they were not. Thus, 14 children with ADHD out of 20 were correctly classified as having low PROBLEM scores, and receiving medication for their behavioural symptoms.

Non-ADHD Group

In the non-ADHD group, no correlation was found between the Biological Causation question of the Attitudes and Attributions questionnaire and any of the other sub-scales of the ECBI, CPRS-R and PSOC. A positive relationship (r= 0.82, n=15, $p<0.05$) was found between PROBLEM and INTENSITY scores of the ECBI, and between INTENSITY (r's between 0.62 and 0.66, n=15, $p<0.05$) and the three sub-scales of the CPRS-R: Cognitive

Problems/Inattention, Hyperactivity and ADHD Index. The CP/I scale correlated positively (r's between 0.64 and 0.86, n=15, $p<0.05$) with the HYP and ADHD scales of the CPRS-R.

A negative relationship (r= -0.64, n=15, $p<0.05$) was found between ECBI INTENSITY scores and PSOC SATISFACTION scores, and negative correlations (r's between –0.53 and –0.62) were also found between ECBI PROBLEM scores and PSOC SATISFACTION and TOTAL PSOC scores. Both the SATISFACTION and EFFICACY scales correlated positively (r's between 0.57 and 0.72, n=15, $p<0.05$) with TOTAL PSOC scores.

Discriminant Function Analysis

Using the Biological Causation question scores, groups were constructed on the basis of a median split (Median=4) to discriminate between parents. Cases above the median (scores of 5, 6 or 7) were combined to form the "Biological" group i.e., those parents who believed their child's behavioural problems to be of a biological nature, with the remaining cases (scores of 1-4) forming another group of parents who did not strongly believe their child's behavioural problems to be of a biological nature. This group included cases falling on the median in order to preserve sample size and enhance statistical power. A forward stepwise discriminant function analysis was performed, in an attempt to determine which of the eight rating scale variables discriminated between the Biological group of parents, and the Non-Biological group of parents. The criterion required for a variable to enter a model was set at $F\geq3.00$ while the criterion for removal was set at F=0.00

A standard discriminant function analysis procedure of eight rating scale variables (TOTAL Acceptability scores of the AAQ; INTENSITY scores and PROBLEM scores of the ECBI; T-OP, T-CP/I, T-HYP and T-ADHD sub-scale scores of the CPRS-R; and TOTAL Satisfaction scores of the PSOC), was significant [Wilks' λ=0.59, $F(8, 40)$=3.54, $p<0.01$].

The three sub-scales of the Attitudes and Attributions Questionnaire (Acceptability, Effectiveness, and Recommendability), and the two sub-scales of the PSOC (Satisfaction and Efficacy) had to be removed due to the redundancy/high correlation with the TOTAL Acceptability scores and TOTAL Satisfaction scores respectively, in order to avoid the danger of matrix ill-conditioning.

A further forward stepwise procedure using the reduced set of rating scale variables to predict membership in the Non-Biological or Biological score groups (defined according to the median split) was significant [Wilks' λ=0.65, $F(3, 45)$=0.800, p<0.001] and provided a correct classification of 75% of the individuals from a three variable model. This model included Cognitive Problems and Inattention (CP/I) t-scores of the CPRS-R [partial Wilks' λ=0.83, $F(1, 45)$=9.45, p<0.01], PROBLEM scores of the ECBI [partial Wilks' λ=0.80, $F(1, 45)$=11.11, p<0.01] and Hyperactivity (HYP) t-scores of the CPRS-R R [partial Wilks' λ=0.86, $F(1, 45)$=7.34, p<0.01]. Cases 8, 30, 32, 34, and 44 were incorrectly classified as being in the Non-Biological group when, in fact, they were all in the Biological group, and cases 14, 16, 18, and 36 were wrongly classified as being in the Biological group when, in fact, they were in the Non-Biological group.

While it is acknowledged that not all cases from the ADHD group were represented in the Biological group within the discriminant function analysis, these cases represented similar constraints, and hence patterns within results are comparable.

Examining the previous correlations between the Biological Causation question and PROBLEM scores of the ECBI (expressed in Tables 12 and 13), at face value it appears as though the nature of the relationship differs between the ADHD and non-ADHD group. Specifically, for the ADHD group there was a significant negative correlation, whereas for the non-ADHD group there was a positive correlation that approached significance. This would

suggest that PROBLEM scores could be used to differentiate between the two groups. The discriminant function analysis provided supporting evidence for this.

Multiple Regression Analysis

Due to the artificial nature of the dichotomous "Biological" variable, and the potential inappropriateness of this for discriminant function analysis (because the analysis is typically used to predict membership in *naturally* occurring groups, rather than groups formed by arbitrary assignment on the basis of distribution (Howell, 1997), a multiple regression analysis was conducted as well.

The dependant variable in the analysis was Biological Causation scores on a continuous scale, rather than in the two groups formed via a median split in the discriminant function analysis above. The same eight predictor variables used in the discriminant function analysis were entered into the standard model, and the results confirmed the multiple regression analysis was significant [$F(8, 40) = 5.33$, $p<0.0001$] and accounted for 41.9% of the variance in the Biological scores. Only one rating scale, PROBLEM scores of the ECBI ($b= -0.957$, $t = -3.52$, $p<0.001$) was independently predictive of the Biological or Non-Biological groups. The less of a problem a parent found his or her child's behavioural difficulties, the more a parent saw these problems as being of a biological nature.

Table 11: *AAQ, ECBI, CPRS-R and PSOC Correlations - ADHD GROUP (n=35)*

VARIABLE	**AAQ: Bio. Cause**	**ECBI: Intensity**	**ECBI: Problem**	**CPRS-R t-OPP**	**CPRS-R: t-CP/I**	**CPRS-R: t-HYP**	**CPRS-R: t-ADHD**	**PSOC: Satisfaction**	**PSOC: Efficacy**	**TOTAL PSOC**
AAQ: Bio. Cause	---	-0.32	-0.54*	-0.04	-0.01	-0.16	-0.12	0.13	-0.01	0.08
ECBI: Intensity		---	0.81*	0.62*	0.06	0.32	0.15	-0.29	-0.27	-0.32
ECBI: Problem			---	0.60*	0.27	0.38*	0.32	-0.45*	-0.34*	-0.46*
CPRS-R: t-OPP				---	0.19	0.35*	0.15	-0.51*	-0.19	-0.42*
CPRS-R: t-CP/I					---	-0.09	0.69*	-0.22	-0.01	-0.14
CPRS-R: t-HYP						---	0.31	-0.26	-0.43*	-0.38*
CPRS-R: t-ADHD							---	-0.19	-0.03	-0.14
PSOC: Satisfaction								---	0.51*	0.90*
PSOC: Efficacy									---	0.84*
TOTAL PSOC										---

* $p<0.05$

Table12: *AAQ, ECBI, CPRS-R and PSOC Correlations - NON-ADHD GROUP (n=15)*

VARIABLE	**AAQ: Bio. Cause**	**ECBI: Intensity**	**ECBI: Problem**	**CPRS-R t-OPP**	**CPRS-R: t-CP/I**	**CPRS-R: t-HYP**	**CPRS-R: t-ADHD**	**PSOC: Satisfaction**	**PSOC: Efficacy**	**TOTAL PSOC**
AAQ: Bio. Cause	---	0.38	0.48	0.18	0.03	0.05	-0.12	-0.21	-0.39	-0.45
ECBI: Intensity		---	0.82*	0.23	0.62*	0.64*	0.66*	-0.64*	0.04	-0.50
ECBI: Problem			---	0.05	0.34	0.23	0.44	-0.62*	-0.01	-0.53*
CPRS-R: t-OPP				---	-0.02	0.27	0.07	-0.24	0.30	0.01
CPRS-R: t-CP/I					---	0.64*	0.86*	-0.33	0.07	-0.23
CPRS-R: t-HYP						---	0.71*	-0.43	0.04	-0.33
CPRS-R: t-ADHD							---	-0.37	0.20	-0.17
PSOC: Satisfaction								---	-0.17	0.72*
PSOC: Efficacy									---	0.57*
TOTAL PSOC										---

* $p<0.05$

DISCUSSION

As predicted, compared with parents of children without behavioural disorders, parents of children with ADHD generally perceived biological causes as being more influential on their child's problem behaviour than did those parents of children without ADHD.

This finding replicates previous studies such as Johnston & Freeman (1997) that also found parents of children with ADHD saw their child's problem behaviour as being more internally caused (i.e., biological) and uncontrollable by the child. The prediction that parents of children with ADHD would respond more negatively to statements about environmental causes for problem behaviour than parents of children without ADHD was not supported.

A difficulty with this finding is knowing whether parents of children without ADHD acknowledged the existence of behavioural "problems" in their children in the same way as the parents of the children with ADHD. Given that the parents of children without ADHD have presumably had little experience with ADHD type behaviours, they would have had to instead make assumptions as to the nature of typical child problem behaviour.

A relationship somewhat different from that predicted was found between biological causation beliefs and problem ratings on the ECBI for parents of children with ADHD. It was expected that the more emphasis the parent placed on biological causation of the child's problems, the more of a problem the parent would find the behaviour.

This has been shown in the results of a study by Johnston & Freeman (1997), that found that parents who make attributions for symptoms of ADHD that are generally consistent with the neurobiological nature of the disorder, do not appear to blame the children for their ADHD behaviours. Rather, they see these behaviours as enduring symptoms of an underlying disorder. However, Johnston & Freeman (1997) found that despite this, parents remain as upset and frustrated

(or more so), and as likely to respond negatively to these behaviours as parents of children without diagnosed behaviour disorders.

Instead, correlations in the present study revealed the opposite pattern, indicating that the more a parent of an ADHD child saw their child's problem behaviour as biologically caused, the less problematic they found the behaviour to be, and thus, the inference could be the less likely they would supposedly be to become upset and frustrated by their child's problem behaviour.

Certainly, the results in this study for the non-ADHD group show similar trends to the Johnston & Freeman (1997) research: the more frequent a child's difficult behaviour, the more of a problem the parent found it. However, it seems although parents of children with ADHD appear to have attributed their child's problem behaviour to neurobiological factors, it is possible they have made allowances for the child's behaviour, in terms of how they let it affect them as parents.

It seems these parents of children with ADHD perhaps recognise the lack of control the child has over his or her own behaviour, as is consistent with previous studies on parental attributions regarding their children with ADHD (Johnston & Freeman, 1997). However, given that controllability of behaviour has not been accounted for in the present study it is hard to pinpoint reasons. Perhaps future research would reveal this relationship by examining parental reactions to child behaviours, as Johnston & Freeman (1997) did with the Written Analogue Questionnaire.

A second explanation for this finding could be that current treatment effects were not controlled for in the present study. As 20 children (57%) in this study were receiving psychostimulant medication at the time of the study, it is difficult to know whether some data regarding parent perceptions of their child's problem behaviour are a result of the behaviour being affected by the medication.

It was not seen as a practical or ethical option to request that the children with ADHD in this study refrain from medication prescribed to them, especially given the high rates of oppositional and hyperactive behaviour reported in the CPRS-R sub-scales. It is these behaviours (the more frequent displays of non-compliance related to the child's difficulties in following through on parental instructions, in particular) that often cause the child to be highly disruptive (Anastopoulos et al., 1992). This disruption adversely affects many areas of child psychosocial functioning, which in turn, affects parent functioning, given the increased caretaking demands imposed (Barkley, 1998). Perhaps a compromise would be to ask parents not to give their child medication 24 hours prior to completing the questionnaires, but again this would require more incentive for parents to be willing to participate.

It is possible to look at the effects of medication on attributions regarding biological causes in this study, by comparing two groups of children with ADHD: those who reported currently receiving treatment, and those who reported not receiving treatment. It would seem, in the present study, that parents of children with ADHD make biological attributions as to the nature of their child's problem behaviour, and thus see it as less problematic because it can be controlled using a biological intervention, i.e., medication. This is certainly supported by the significant discriminant function analysis, which showed the lower the problem score, the more likely it was that the child was receiving medication.

Thus, the preliminary analysis made in this study suggests that a link between medication and lower problem scores exists. The medication presumably controls the biological causes of problem behaviour and so remaining problem behaviours cannot be easily attributed to biological causes. This, in turn, supports the notion of a multi-modal treatment, as medication cannot control all ADHD symptoms in all children. Hence a key area for future research would be to look at which

behaviours still cause problems for parents, and whether these behaviours would benefit from a behavioural intervention such as behavioural family intervention.

The aim of this study was not to suggest that medication is an inefficacious treatment for ADHD, but rather to look at perceptions of an alternative treatment, namely behavioural family intervention as influenced by beliefs about the causes of ADHD. Behavioural family intervention has also been found to be beneficial in the treatment of ADHD, may reduce the dosage of medication required to control ADHD symptoms, and help families to cope when medication may be insufficient or inactive (Anastopoulos, 1996). As the preliminary comparisons show, 6 children (30%) of 20 children receiving treatment still suffered significant ADHD type behaviour so as to be seen as a problem by their parents.

Despite the finding that parents of children with ADHD reported being on average less affected by their child's problem behaviour, group differences were found in levels of parenting satisfaction. Not surprisingly, the more frequently ADHD-characteristic behaviour was displayed by their child (particularly oppositional behaviours), the less overall satisfaction and efficacy parents of children with ADHD reported experiencing from their parenting role. This is reflected when compared with parents of children without ADHD, who show a similar trend but the expected opposite direction, of low PROBLEM scores and higher levels of satisfaction and efficacy.

It is interesting to note this in light of the finding, that despite the increased intensity of the ADHD child's behaviour, the less problematic the parent found the behaviour. However, it seems that although the ADHD parent's initial reaction is one of increased tolerance of their child's problem behaviour measured by the ECBI, the PSOC scales reveal that parents of children with ADHD gain significantly less gratification from their role as a parent. Thus, it appears as though parents of children with ADHD are making a conscious decision about not allowing their child's

problem behaviour to affect them, yet the Parent Sense of Competence scale reveals perhaps a more global and less articulated dissatisfaction with the parenting role.

Correlations also showed the more hyperactive the parent believes his or her child to be, the less competent they feel in their parenting role. Possibly this signifies a reduced sense of control they feel they have over his or her child's behaviour. The more frequent a child's problem behaviour, the more likely it was to be characteristically oppositional, and the more oppositional and hyperactive a child's behaviour was, the more likely it was to be rated as a problem by parents. Again, future research could investigate the issue of controllability to reveal this possible relationship.

Although parents of children with ADHD were more likely to attribute their child's problem behaviour to biological causes, it is clear from this study that most parents are not particularly interested in behavioural family intervention as a sole treatment for their child's ADHD. This can be seen in Table 4, under the *Acceptability* and *Effectiveness* scores, with both parents of children with ADHD or children without ADHD responding with mean scores below 60% acceptability and perceived effectiveness of behavioural family intervention for their child's problems. Reasons for these moderate acceptability ratings are unclear, although Blampied & Kahan (1992, p. 410) have reported that familiarity with a treatment – with the procedure, its practical difficulties, the severity of its side effects, and the likelihood of positive outcomes – has been emphasised as an important variable affecting the acceptability of various treatments. Perhaps behavioural family intervention is seen as a relatively new treatment approach for New Zealand parents, and thus their unfamiliarity with the intervention and its procedures makes them sceptical of its effectiveness.

It would be interesting to investigate in future studies what treatment options parents of children with ADHD had been offered upon initial diagnosis of his or her child. Parents of children

with ADHD in this study do not believe that behavioural family intervention is likely to be a particularly effective treatment in itself, and this is partially reflected in the number of children within the study taking psychostimulant treatment for the disorder (although we do not know what treatment options each family was offered). What is not clear is how these children came to be prescribed the medication - whether it was recommended by a clinician, or requested by the parents.

Although it was initially predicted there would be a link between biological causation of children with ADHD symptoms and acceptance of behavioural family intervention, this was not supported by the present study. However, this lends support to the argument that, independent of beliefs about aetiology of ADHD symptoms, there is still good reason for clinicians to recommend behavioural family intervention in combination with stimulant treatment, as behavioural interventions such as behavioural family intervention have been shown to relieve many of the effects associated with ADHD (Anastopoulos et al., 1991; Barkley, 1998).

An example of well-established, empirically founded local agencies that offer behavioural interventions such as behavioural family intervention is the Triple P Programme, which teaches parents self-regulation of parental skill. Triple P uses different delivery modes of the five levels of intervention involved, to ensure the treatment is tailored to the individual requirements of families (Sanders, 1999). By providing parents with the skills to help their child regulate and manage his or her problem behaviour without outside intervention, after initial training, behavioural family intervention is a big step towards providing families with the capacity for the long-term treatment a child with a developmental disability requires.

An important area for future research would be to investigate the treatment options suggested to parents by paediatricians, psychologists and other professionals diagnosing ADHD in children, and whether these professionals offered any opinions on the aetiology of ADHD and on

the various treatments available. If so, this may well influence a parent in making the decision about which treatment is most appropriate, particularly if they have no previous knowledge of ADHD. It may be that clinicians emphasise the neurobiological aspect of the disorder, and thus parents believe that medication is the only viable option.

Although not systematically reported, as a result of this study, a number of parents commented that they were unhappy with the amount of medication his or her child was on, and that they would be interested in behavioural family intervention as part of a *combined* treatment for ADHD. A few parents indicated their child was no longer on medication because either the parents or the child themselves had decided they did not want to be dependent on medication to control their behaviour, which can be seen as a positive step in the direction of combined therapy. As one of the most recent, comprehensive and controversial studies has shown, combined treatment for ADHD symptoms required significantly less medication in order to control difficult behaviours, and as a result, reduced family conflict (The-MTA-Cooperative-Group, 1999a).

The variable that best predicts the biological nature of parental attributions is how greatly parents feel affected by problem behaviours, and to a lesser degree, the occurrence of cognitive problems/inattention, and hyperactivity. A negative correlation between Problem scores and the Biological Causation question is supported by the negative beta weight found in the multiple regression analysis.

Neither the discriminant function analysis or the multiple regression analysis is entirely appropriate, but given the limitations of the data (small sample size, difference in group size etc.), this study is only looking for an indication as to a pattern of results. It is reassuring to note that both analyses indicate similar effect, that PROBLEM scores of the ECBI bear significant relationship to the dependent variable, Biological Causation.

Limitations of the Present Study

These results should be interpreted with caution, given the small sample size and the fact it was a convenience sample of volunteer participants, not a stratified or random sample. This restricts generalisation to the rest of the population, and attenuates the power of the various statistical tests used. It should be noted, however, that the small sample size was due largely to the difficulty in finding children who had been officially diagnosed with ADHD. There was also a difference in the method of recruitment for the control group of children without ADHD. It was originally intended that parents of children with health difficulties but not behavioural problems would be selected from the Pakuranga Health Camp, so as to use a control group of similar family circumstances as the children with ADHD (e.g., socio-economic status, schooling opportunity etc). However, it was necessary to find a new sample for the control group at late stages of the study, when the Health Camp was closed for some time due to illness. Opawa School was chosen as a substitute population, as it serves a community of similar composition of socio-economic status, and also has a behavioural unit operating at the school (although no children with behavioural problems were selected from this school).

It was the researcher's original intention to obtain an additional group of parents with children who experience severe problem behaviours, for example, those evident in disorders such as Conduct Disorder or Oppositional Defiant Disorder, but *not* Attention Deficit-Hyperactivity Disorder. Thus, parental attributions could be compared to measure whether it is generally severe behavioural problems of the child, or specifically ADHD-type symptoms that influence a parent's willingness to consider and engage in therapies such as behavioural family intervention. However, the Privacy Act made gaining access to these children and their parents as a student researcher impossible. Given the amount of difficulty experienced in recruiting the ADHD group alone, the

idea of using this second control group unfortunately had to be relinquished as it became beyond the scope of this study. However, this would definitely be an area to pursue in future research.

The reliance on parent-rating scales (i.e., the Attitudes and Attributions Questionnaire, Eyberg Child Behaviour Inventory, Conners' Parent Rating Scale and Parent Sense of Competence Scale used in this study) is also a limitation. While these measures remain the most practical method of assessing these variables, it should be noted that there are some biases associated with such scales, for example response set and negative halo (Hinshaw, 1987). More specifically, there may have been a certain degree of response bias in the answers of the parents of children with ADHD (and perhaps to a lesser degree, parents of children without ADHD), that they may have responded either according to what they felt the Researcher was looking for, or by attempting to portray themselves in a more flattering and capable light (particularly in the case of the PROBLEM scale of the Eyberg Child Behaviour Inventory). Nonetheless, these scales remain the most practical method of obtaining this type of information, particularly with ADHD samples (Lambert, Harsough, & Sandoval, 1990). In addition, this possible bias may go someway to explaining the unexpected relationship between lower ratings of child problem behaviour, yet higher ratings of dissatisfaction and efficacy of parents of children with ADHD, as noted earlier.

A major limitation of this study was the weakness of the Attitudes and Attributions Questionnaire, in that there were a number of additional questions that could have been asked. In the present study it is hard to know if the parents of children without ADHD acknowledge the existence of behavioural "problems" in their children in the same way as the parents of the children with ADHD. Specifically, in future research it may be beneficial use a questionnaire similar to the Written Analogue Questionnaire developed for a study by Johnston & Freeman (1997). This questionnaire provided three exemplars each for three behaviours - inattentive-overactive (IO)

symptoms of ADHD, oppositional-defiant behaviours (OD), and prosocial behaviours (PRO). Parents were asked to imagine the scenarios described an interaction between themselves and their child then rated each scenario on six 10-point rating scales, ranging from child control over the behaviour, to parent responsibility for the behaviour, to parent responses to the behaviour.

Such a questionnaire would fill some of the gaps left by this study, such as parental attributions as to the controllability, stability and parental responsibility for a child's behaviour. However, the Written Analogue Questionnaire was seen as beyond the scope of this study in terms of time and resources available. Likewise, structured interviews with parents and children would yield useful information on their views about the causes, impact and treatment of developmental problems such as ADHD, but were not practical in the context of the current research.

Future Directions

There are a number of things that could be looked at in future research. One specific question is whether the professional who initially made (or suggested) the diagnosis relayed any information or perspectives regarding the nature of ADHD and its aetiology. This study looked at the parents' attributions only, and while taking note of who has made a diagnosis of ADHD (if any) the scope of this research did not allow for investigation of the person who has made the initial diagnosis. It would be interesting to get parental attributions before and after diagnosis to look at how influenced parents are by the beliefs of the individual making the diagnosis and their opinions regarding cause and treatment. If medication does reduce frequency and intensity of ADHD symptoms it might act as a confirmation of biological cause of parents (their attribution may be drugs influence biology which influence behaviour) and hence reduce acceptance of alternative therapies. This may prevent parents trying potentially more effective therapies.

Another interesting perspective would be to look at whether any other family members suffered from ADHD. A number of participants commented that either they themselves, their partner, siblings, even grandparents (or a combination of these) had been diagnosed with ADHD. It is highly likely that someone else suffering from ADHD within the same family would have an impact on coping strategies and treatments used to deal with symptoms. Barkley (1998) reviewed research on ADHD within families, and although it ADHD is highly heritable, symptoms remain malleable to unique environmental influences and non-shared social learning. Studies have shown that despite the acknowledged role neurobiology plays in ADHD, "the actual severity of the symptoms, the continuity of those symptoms over development, the types of secondary symptoms, and the outcome of the disorder are related in varying degrees to environmental factors" (Barkley, 1998, p. 175). Hence, as discussed previously, if medication is controlling the biological symptoms of the disorder, it stands to reason that behavioural family intervention could play a major role in these environmental factors.

Future research could include a second attributional scale to look further at to what specific aspects parents attribute their child's behaviour, and how controllable they see the behaviour (both in terms of parent and child control). This study did not include an additional scale, as it was deemed that four questionnaires in one booklet were taxing enough on the time schedules of volunteer participants. As it was, the low return rate of questionnaires could possibly be linked to the sheer volume of information required, and the time required completing the booklet. In order to achieve a better return rate in similar future research, additional funding would be required in order to offer parents more incentive to participate. Alternatively, field workers could be employed to visit parents at home, and assist them to fill in the questionnaires, ensuring a more efficient return rate.

Some questions of interest would also require a structured interview of parents (and possibly children) for a satisfactory answer.

Further research should include investigating difficulties in parent-child interactions, and a more in-depth look at the effects these interactions play on the acceptability of treatments. Research investigating the effects of medication on parent-child interactions found that the medications resulted in significant improvements in child hyperactivity and compliance, which in turn resulted in a corresponding reduction in mothers' use of negative commands and behaviour. This suggests that parent negative behaviour appears to be in response to the child's negative behaviour, and not that the child's symptoms are in response to the parent's negative behaviour (e.g. Barkley & Cunningham, 1979). However, further studies have shown that the manner in which parents attempt to manage their child's ADHD can still aggravate symptoms and increase parent-child conflict (e.g. Barkley, Fischer, Edelbrock, & Smallish, 1991). Thus, if a parent is told medication can reduce hyperactivity in his or her child, they may not see any need to look at alternative treatments which could have a beneficial impact on other symptoms, such as oppositional behaviours and negative conflicts between family members that have developed as a result of ADHD.

The present study unfortunately could not examine the issue of gender, as insufficient numbers of female children with ADHD were available (as pointed out earlier, males with ADHD greatly outnumber girls with the disorder). However, as research on gender differences with regard to ADHD symptoms is a neglected area, and what little research has been done suggests contrary findings (i.e. Gaub & Carlson, 1997; Rucklidge & Tannock, in press), it may be that there are notable differences in ADHD symptoms between males and females. If so, these differences should be taken into consideration when selecting appropriate treatments. There were also too few participants in the present study to examine variables of ethnicity or family composition.

SUMMARY

The results of the present study suggest that severity and frequency of an ADHD child's behaviour may be one of the major factors influencing parental attributions about the cause of the disorder. Compared with parents of children without behavioural disorders, parents of children with ADHD generally saw biological causes as being more influential on their child's problem behaviour than did the parents of children without ADHD. This difference in beliefs about causation did not, however, generate significant differences between groups in the acceptability of behavioural family intervention. The more a parent of an ADHD child saw his or her child's problem behaviour as biologically caused, the less problematic they found the behaviour to be, yet despite this, further data revealed group differences in levels of parenting satisfaction. The more frequent ADHD-characteristic behaviour their child displays (particularly oppositional behaviours), the less overall satisfaction and efficacy parents of children with ADHD gain from their parenting role

The findings of the present study suggest parents of children with ADHD make biological attributions as to the nature of their child's problem behaviour, and thus see it as less problematic because it can be controlled using a biological intervention, i.e. medication. The variable that best predicts the biological nature of parental attributions is how greatly parents feel affected by problem behaviours, and to a lesser degree, the occurrence of cognitive problems/inattention, and hyperactivity

The majority of parents in this study were not interested in behavioural family intervention as a sole treatment for their child's ADHD. Parents of children with ADHD did not believe that behavioural family intervention is an effective treatment in itself, according to their responses on the Attitudes and Attributions Questionnaire, and this is partially reflected in the number of children within the study taking psychostimulant treatment for the disorder.

It seems imperative that diagnosis of children with ADHD be a careful and thorough process, so as to ascertain all aspects of the individual's symptoms, and then that parents should be offered a comprehensive range of treatments for their ADHD child, based on the specific diagnosis. It seems possible that parents are not being made fully aware of the different range of treatments currently available (reflected at least in this study by the number of children on Ritalin as sole treatment), despite much research that suggests multi-modal interventions are most effective in the management of ADHD. While psychostimulant medication may be effective for some symptoms of ADHD other treatments, such as behavioural family intervention, may benefit both child and parent in a number of ways. Thus, educating clinicians to make parents aware of the different facets of ADHD as a disorder and the number of different possible treatments available, as well as emphasising the effectiveness of a multimodal treatment approach.

Educating parents about the extent of biological cause in ADHD may be a good way to reduce biological attributions and increase acceptance of behavioural family intervention. By teaching parents to cope more effectively with their child's problematic behaviour, parent stress is relieved, medication can often be reduced, and both child and parents can learn to control elements of the problem behaviour in situations where medication may be ineffective or insufficient.

REFERENCES

- American-Psychiatric-Association. (1980). Diagnostic and statistical manual of mental disorders (3rd edition ed.). Washington DC: Author.
- American-Psychiatric-Association. (1987). Diagnostic and statistical manual of mental disorders (3rd edition, revised ed.). Washington DC: Author.
- American-Psychiatric-Association. (1994). Diagnostic and statistical manual of mental disorders (4th edition ed.). Washington DC: Author.
- Anastopoulos, A. D. (1996). Facilitating parental understanding and management of attention-deficit/hyperactivity disorder. In M. A. Reinecke & F. M. Dattilio & A. M. Freeman (Eds.), Cognitive therapy with children and adolescents: A casebook for clinical practice. (pp. 327-343). New York: Guilford Press.
- Anastopoulos, A. D., Barkley, R. A., & Shelton, T. L. (1996). Family-based treatment: Psychosocial intervention for children and adolescents with attention deficit hyperactivity disorder. In E. D. Hibbs & P. S. Jensen (Eds.), Psychosocial treatments for child and adolescent disorders: Empirically based strategies for clinical practice. Washington DC: American Psychiatric Association.
- Anastopoulos, A. D., DuPaul, G. J., & Barkley, R. A. (1991). Stimulant medication and parent training therapies for attention deficit-hyperactivity disorder. Journal of Learning Disabilities, 24(4), 211-218.
- Anastopoulos, A. D., Guevremont, D. C., Shelton, T. L., & DuPaul, G. J. (1992). Parenting stress among families of children with attention-deficit hyperactivity disorder. Journal of Abnormal Child Psychology, 20(5), 503-520.

- Anastopoulos, A. D., Shelton, T. L., DuPaul, G. J., & Guevremont, D. C. (1993). Parent training for attention-deficit hyperactivity disorder: its impact on parent functioning. Journal of Abnormal Child Psychology, 21(5), 581-596.
- Anderson, J. C., Williams, S., McGee, R., & Silva, P. A. (1987). DSM-III disorders in preadolescent children: Prevalence in a large sample from the general population. Archives of General Psychiatry, 44, 69-76.
- Baden, A., & G.W., H. (1992). Mother's attributions and expectancies regarding their conduct disordered children. Journal of Abnormal Child Psychology, 20, 467-485.
- Bandura, A. (1982). Self-efficacy in human agency. American Psychologist, 37, 122-147.
- Barbaresi, W. J., & Olsen, R. D. (1998). An ADHD educational intervention for elementary schoolteachers: A pilot study. Journal of Developmental and Behavioral Pediatrics, 19(2), 94-100.
- Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. Psychological Bulletin, 121(1), 65-94.
- Barkley, R. A. (1998). Attention-Deficit Hyperactivity Disorder: A handbook for diagnosis and treatment (2nd ed.). New York: Guildford Press.
- Barkley, R. A., & Cunningham, C. E. (1979). The effects of methylphenidate on the mother-child interaction of hyperactive children. Archives of General Psychiatry, 36, 201-208.
- Barkley, R. A., Fischer, M., Edelbrock, C. S., & Smallish, L. (1991). The adolescent outcome of hyperactive children diagnosed by research criteria: III. Mother-child interactions, family conflicts, and maternal psychopathology. Journal of Child Psychology and Psychiatry, 32, 233-256.

- Barkley, R. A., Guevremont, D.C., Anastopoulos, A.D., & Fletcher, K.E. (1992). A comparison with three family therapy programs for treating family conflicts in adolescents with attention-deficit hyperactivity disorder. Journal of Consulting and Clinical Psychology, 60(3), 450-462.
- Benson, M. J. (1989). Attributional measurement techniques: Classification and comparison of attributions for measuring causal dimensions. Journal of Social Psychology, 129(3), 307-323.
- Benton, A. (1991). Prefrontal injury and behavior in children. Developmental Neuropsychology, 7, 275-282.
- Bettleheim, B. (1973). Bringing up children. Ladies Home Journal, 23.
- Blampied, N. M., & Kahan, E. (1992). Acceptability of alternative punishments: A community survey. Behaviour Modification, 16(3), 400-413.
- Borden, K. A., & Brown, R. T. (1989). Attributional outcomes: The subtle messages of treatments for attention deficit disorder. Cognitive Therapy and Research, 13(2), 147-160.
- Bugental, D. B., Johnston, C., New, M., & Silvester, J. (1998). Measuring parental attributions: Conceptual and methodological issues. Journal of Family Psychology, 124(4), 459-480.
- Burns, G. L., & Patterson, D. R. (1990). Conduct problem behaviours in a stratified random sample of children and adolescents: new standardization data on the Eyberg Child Behaviour Inventory. Journal of Consulting and Clinical Psychology, 2(4), 391-397.
- Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N. (1998). The Revised Conners' Parent Rating Scale (CPRS-R): Factor structure, reliability and criterion validity. Abnormal Child Psychology, 26(4), 257-268.

- Copeland, L., Wolraich, M., Lindgren, S., Milich, R., & Woolson, R. (1987). Pediatrician's reported practices in the assessment and treatment of attention deficit disorders. Developmental and Behavioural Pediatrics, 8(191-197).
- Cunningham, C. E., Bremner, R. B., & Secord-Gilbert, M. (1997). COPE (The Community Parent Education Program): A school-based family systems oriented workshop for parents of children with disruptive behavior disorders (leader's manual). Ontario: COPE Works.
- Estrada, A. U., & Pinsof, W. M. (1995). The effectiveness of family therapies for selected behavioral disorders of childhood. Journal of Marital and Family Therapy, 21(4), 203-440.
- Eyberg, S. M., & Robinson, E. A. (1983). Conduct problem behaviour: Standardization of a behaviour rating scale with adolescents. Journal of Clinical Child Psychology, 12, 347-354.
- Feingold, B. (1975). Why is your child hyperactive? New York: Putnam.
- Fergusson, D. M., Horwood, L. J., & Lynskey, M. T. (1993). Prevalence and comorbidity of DSM-III-R diagnoses in a birth cohort of 15-year-olds. Journal of the American Academy of Child and Adolescent Psychiatry, 32, 1127-1134.
- Fisher, M. (1997). The persistence of ADHD into adulthood: It depends on who you ask. ADHD Report, 5(4), 8-10.
- Gaub, M., & Carlson, C. (1997). Gender differences in ADHD: A meta-analysis and critical review. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 1036-1045.
- Hinshaw, S. (1987). On the distinction between attention deficits/hyperactivity and conduct problems/aggression in child psychopathology. Psychological Bulletin, 101, 443-463.
- Howell, D. C. (1997). Statistical methods for psychology (4th ed.). California: International Thomas Publishing Inc.

- Jensen, P. S., Martin, D., & Cantwell, D. P. (1997). Comorbidity in ADHD: Implications for research, practice, and DSM-V. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 1065-1079.
- Jenson, C. E., Green, R. G., Singh, N. N., Best, A. M., & Ellis, C. R. (1998). Parental attributions of the causes of their children's behavior. Journal of Child and Family Studies, 7(2), 205-215.
- Johnston, C., & Freeman, W. (1997). Attributions for child behavior in parents of children without behavior disorders and children with attention-deficit hyperactivity disorder. Journal of Consulting and Clinical Psychology, 65(4), 636-645.
- Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. Journal of Clinical Child Psychology, 18(2), 167-175.
- Johnston, C., Reynolds, S., Freeman, W.S., & Geller, J. (1998). Assessing parent attributions for child behavior using open-ended questions. Journal of Clinical Child Psychology, 27(1), 87-97.
- Kazdin, A. E. (1980). Acceptability of alternative treatments for deviant child behavior. Journal of Applied Behavior Analysis, 13, 259-273.
- Kazdin, A. E. (1987). Conduct disorders in childhood and adolescence (Vol. 9). California: Sage Publications.
- Lambert, N., Harsough, C., & Sandoval, J. (1990). Manual for the children's attention and adjustment survey. Circle Pines, MN: American Guidance Service.
- Mash, E. J., & Johnston, C. (1983). Parental perceptions of child behavior problems, parenting self-esteem, and mothers' reported stress in younger and older hyperactive and normal children. Journal of Consulting and Clinical Psychology, 51, 86-99.

- Mattes, J. A. (1980). The role of frontal lobe dysfunction in childhood hyperkinesis. Comprehensive Psychiatry, 21, 358-369.
- McMahon, R. J., & Forehand, R. (1988). Conduct disorders. In E. J. Mash & L. G. Terdal (Eds.), Behavioral assessment of childhood disorders (2nd ed., pp. 105-153). New York: Guilford Press.
- Miller, A. (1999). Appropriateness of psychostimulant prescription to children: Theoretical and empirical perspectives. Canadian Journal of Psychiatry, 44(10), 1017-1024.
- Pilska, S. R., Greenhill, L. L., Crimson, M. L., Sedillo, A., Carlson, C., Conners, C. K., McCracken, J. T., Swanson, J., M., Hughes, C., W., Llana, M. E., Lopez, M., & Toprac, M. G. (2000). The Texas Children's Medication Alogorithm Project: Report of the Texas consensus conference panel on medication treatment of childhood attention-deficit/hyperactivity disorder. Journal of the American Academy of Child and Adolescent Psychiatry, 39(7), 920-927.
- Reimers, T. M., Wacker, D. P., Derby, K. M., & Cooper, L. J. (1995). Relation between parental attributions and the acceptability of behavioral treatments for their child's behavior problems. Behavioral Disorders, 20(3), 171-178.
- Rucklidge, J. J., & Tannock, R. (in press). Psychiatric, psychosocial, and cognitive functioning of female adolescents with ADHD. Journal of the American Academy of Child and Adolescent Psychiatry.
- Sanders, M. R. (1999). Triple P- Positive Parenting Program: towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. Clinical Child and Family Psychology Review, 2(2), 71-90.

- Sayal, K., & Taylor, E. (1997). Drug treatment in attention deficit disorder: A survey of professional consensus. Psychiatric Bulletin, 21(7), 398-400.
- The-MTA-Cooperative-Group. (1999a). A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. Archives of General Psychiatry, 56, 1073-1086.
- The-MTA-Cooperative-Group. (1999b). Moderators and mediators of treatment response for children with attention-deficit/hyperactivity disorder. Archives of General Psychiatry, 56, 1088-1096.
- Weiner, B. (1986). An attributional theory of motivation and emotion. New York: Springer.
- Weiss, G., & Hechtman, L. (1993). Hyperactive children grown up (2nd ed.). New York: Guilford Press.
- Willis, T. J., & Lovaas, I. (1977). A behavioral approach to treating hyperactive children: the parent's role. In J. B. Millichap (Ed.), Learning disabilities and related disorders. Chicago: Yearbook Medical Publications.

APPENDICES

APPENDIX A:

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16 January 2001

Anna Taylor
C/o Neville Blampied
Department of Psychology
UNIVERSITY OF CANTERBURY

Dear Anna

The Human Ethics Committee advises that your research proposal **"Parent beliefs about causes of their child's behaviour"** has been considered and approved.

Yours sincerely

Isobel S Phillips
Secretary

APPENDIX B:

DSM-IV Diagnostic Criteria for Attention-Deficit Hyperactivity Disorder

A. Either (1) or (2)

1. six or more of the following symptoms of **inattention** have persisted for at least 6 months to a level of that is maladaptive and inconsistent with developmental level:

Inattention

a. often fails to give close attention to details or makes careless mistakes in school work, work or other activities.
b. often has difficulty sustaining attention in tasks or play activities.
c. often does not seem to listen when spoken to directly.
d. often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions)
e. often has difficulty organising tasks and activities
f. often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
g. often loses things necessary for tasks and activities (e.g. toys, school assignments, pencils, books or tools)
h. is often easily distracted by extraneous stimuli
i. is often forgetful in daily activities

2. six or more of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

a. often fidgets with hands or feet or squirms in seat
b. often leaves seat in classroom or in other situations in which remaining seated is expected
c. often runs about or climbs excessively in situation in which it is inappropriate (in adolescents of adults, may be limited to subjective feelings of restlessness)
d. often has difficulty playing or engaging in leisure activities quietly
e. is often "on the go" or often acts as if "driven by a motor"
f. often talks excessively

Impulsivity

a. often blurts out answers before questions have been completed
b. often has difficulty awaiting turn
c. often interrupts or intrudes on others (e.g., butts into conversation or games)

B. Some hyperactive-impulsive or inattentive symptoms that cause impairment were present before age 7 years.

C. Some impairment of the symptoms is present two or more settings (e.g., at school [or work] and at home).
D. There must be clear evidence of significant impairment in social, academic or occupational functioning.
E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorders and are not better accounted for by another mental disorder (e.g., Mo9od Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder.

Code based on type:

Attention-Deficit/Hyperactivity Disorder, Combined Type:
If both Criteria A1 and A2 are met for the past 6 months

Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type:
If Criterion A1 is met, but Criterion A2 is not met of the past 6 months

Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type:
If Criterion A2 is met, but Criterion A1 is not met for the past 6 months

Taken from *Diagnostic And Statistical Manual for Mental Disorders (*4th edition), pp. 83-85

APPENDIX C:

Family Demographic Details

Parent / Caregiver #1

Name:_____
Surname First Names

Date of Birth: / /

NZ European ( )
Maori ( ) Iwi_____
Pacific Island (please specify) _____
Other Ethnic Group (please specify) _____

Parent / Caregiver #2

Name:_____
Surname First Names

Date of Birth: / /

NZ European ( )
Maori ( ) Iwi_____
Pacific Island (please specify) _____
Other Ethnic Group (please specify) _____

My Child lives with (please tick which apply):
1. Mother ( ) OR Father ( ) alone
2. Both biological parents ( )
3. One biological parent & one Step-parent/defacto ( )
4. Other Caregivers ( )

Relationship of child to Caregivers_____
_____

YOUR CHILD'S DETAILS: Name: _____

Date of birth: / / Male ( ) Female ( )

Is your child: a) your biological child ( )
b) adopted ( )
c) fostered ( )

Has your child ever been diagnosed with ADHD and /or any other behavioural disorder?
YES/NO

If YES, please specify:_____
_____

Who diagnosed the disorder/s?

_____

Is your child currently receiving treatment for the above disorder/s? YES/NO
If YES, please specify:_____
_____
_____
_____

APPENDIX D:

Attitudes and Attributions Questionnaire

Please complete the items listed on the following pages. The items should be completed by circling the number that best indicates how you feel about the validity of the statement. Please read the items very carefully because circling one number rather than another may not represent the meaning you intended.

1. How appropriate is the following statement?
"My child has ADHD (Attention Deficit Hyperactivity Disorder)."

1	2	3	4	5	6	7
not true at all			moderately true			very true

2. How appropriate is the following statement? "I believe my child's problems are due to physical causes (e.g. a brain abnormality, problems at birth etc.)

1	2	3	4	5	6	7
not true at all			moderately true			very true

3. How appropriate is the following statement? "I believe my child's problems are due to external causes (e.g. difficult home circumstances etc.)

1	2	3	4	5	6	7
not true at all			moderately true			very true

Family therapy works on the principle that children's behaviour may be caused by patterns of interaction between the child and his/her parents or caregivers which have accidental, unintended negative consequences. In Family Therapy, parents meet with a therapist who teaches them to use specific procedures to alter the ways they interact with their child, to promote their child's prosocial behaviour and to decrease oppositional behaviour. Parents are taught to identify, define and observe problem behaviours. Subsequently, parents learn how encourage and sustain positive, co-operative behaviour. Techniques taught include using positive reward, mild but effective non-physical punishment (e.g. quiet time), and how to communicate effectively and negotiate positively.

Based on the above definition of family therapy, please circle the number that best indicates how you feel about the validity of following statements:

4. How acceptable do you find Family Therapy to be for your child's problem behaviour?

1	2	3	4	5	6	7
not at all acceptable			moderately acceptable		very acceptable	

5. How willing would you be to carry out Family Therapy yourself to change your child's behavioural problems?

1	2	3	4	5	6	7
not at all willing			moderately willing		very willing	

6. How cruel or unfair do you consider Family Therapy?

1	2	3	4	5	6	7
very cruel			moderately cruel		not cruel at all	

7. How consistent is Family Therapy with common sense or everyday notions about what treatment should be?

1	2	3	4	5	6	7
very different or inconsistent			moderately consistent		very consistent with everyday notions	

8. How much do you like the procedures used in Family Therapy?

1	2	3	4	5	6	7
do not like them at all			moderately like them		like them very much	

9. How effective is Family Therapy likely to be for your child?

1	2	3	4	5	6	7
not at all effective			moderately effective		very effective	

10. How likely is Family Therapy to make permanent improvements in your child's behaviour?

1	2	3	4	5	6	7
unlikely			moderately		very likely	

11. How effective do you think Family Therapy would be when used as a sole treatment for ADHD or other behavioural problems?

1	2	3	4	5	6	7
not effective at all			moderately effective			very effective

12. How effective do you think Family Therapy would be used in combination with medication as a treatment for ADHD or other behavioural problems?

1	2	3	4	5	6	7
not effective at all			moderately effective			very effective

13. How effective do you think medication alone would be as a treatment for ADHD or other behavioural problems?

1	2	3	4	5	6	7
not effective at all			moderately effective			very effective

14. Overall, what is your general reaction to Family Therapy as a treatment?

1	2	3	4	5	6	7
very negative			ambivalent			very positive

15. Would you recommend Family Therapy to other parents who are experiencing child behaviour problems similar to those you have experienced?

1	2	3	4	5	6	7
no, not at all			maybe			yes, definitely